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FIFTY-EIGHTH ANNUAL REPORT

OF THE

Ohio State Board of Agriculture

WITH AN ABSTRACT OF
THE PROCEEDINGS OF

THE COUNTY AGRICULTURAL SOCIETIES

For the Year 1903

TO THE

GENERAL ASSEMBLY OF THE STATE OF OHIO.

Springfield, Ohio:
The Springfield Publishing Company,
State Printers.
1904.

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ANNUAL REPORT

OF THE

Ohio State Board of Agriculture

For the Year 1903.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, March 10, 1904.

To the Honorable the General Assembly of Ohio:

GENTLEMEN:—The Ohio State Board of Agriculture has the honor to submit herewith its fifty-eighth annual report, agreeably to the provisions of sections 3693 and 3694 of the Revised Statutes.

The report contains the transactions of the Board for the year; crop and stock reports issued during the year; the agricultural statistics, as gathered by township assessors; comparative tables of the important farm products; proceedings of the State Farmers' Institute and annual meeting of the Board; report of inspection and analyses of commercial fertilizers; report of the County Farmers' Institutes held in the State and conducted under the direction of the Board; report of Nursery and Orchard Inspection; report of the Board of Live Stock Commissioners; and, as an appendix, the annual report of the State Horticultural Society.

The report shows the work of the Board and the Department of Agriculture during the year 1903, as transacted through its several divisions.

The State Fair held in 1903, agreeably to the provisions of section 3693, Revised Statutes, was the most successful, in all respects, ever held in the State. The educational advantages of these annual State Fairs can scarcely be over-estimated.

The Board appreciates the liberal appropriations made by the Seventy-sixth General Assembly for the construction of sanitary sewers and new exhibition buildings. A generous appropriation by the Seventy-seventh General Assembly will enable the Board to complete the construction of such suitable buildings as should be erected upon the State Fair grounds, and when fully completed, according to plans now contemplated, Ohio will have an equipment for State Fair purposes second to no State in the Union.

The officers and members of the Board, and each and every division of the Ohio Department of Agriculture, are exerting themselves, to the extent of their ability, in performing the many duties required of them by the several acts of the General Assembly of Ohio.

Respectfully,
THE OHIO STATE BOARD OF AGRICULTURE,
By, W. W. MILLER, *Secretary,*
J. W. FLEMING, *Asst. Secretary.*

Ohio State Board of Agriculture
1903

OFFICERS.

T. E. CROMLEY, President.
B. P. BALDWIN, Vice-President.
T. L. CALVERT, Treasurer.
W. W. MILLER, Secretary.
Columbus.
J. W. FLEMING, Asst. Sec'y.
Columbus.

MEMBERS.

J. S. STUCKEY, Van Wert, Van Wert Co.	Term expires Jan.,	1904
B. P. BALDWIN, R. R. 1., Newton Falls, Mahoning Co.	" "	1904
T. E. CROMLEY, Ashville, Pickaway Co.	" "	1905
T. L. CALVERT, Selma, Clark Co.	" "	1905
WM. MILLER, Gypsum, Ottawa Co.	" "	1906
J. L. CARPENTER, Carpenter, Meigs Co.	" "	1906
C. H. GANSON, Urbana, Champaign Co.	" "	1907
A. P. SANDLES, Ottawa, Putnam Co.	" "	1907
R. O. HINSDALE, Wadsworth, Medina Co.	" "	1908
SAMUEL TAYLOR, Grove City, Franklin Co.	" "	1908

EXECUTIVE COMMITTEE.

T. E. CROMLEY, President.
J. S. STUCKEY.
T. L. CALVERT.
SAMUEL TAYLOR.
A. P. SANDLES.

FARMERS' INSTITUTE COMMITTEE.

T. E. CROMLEY, Chairman.
WILLIAM MILLER.
R. O. HINSDALE.

AUDITING COMMITTEE.

B. P. BALDWIN, Chairman.
J. L. CARPENTER.
C. H. GANSON.

Ohio State Board of Agriculture

1904.

OFFICERS.

JEREMIAH L. CARPENTER, President. WILLIAM MILLER, Vice President.
THOMAS L. CALVERT, Treasurer.
WELLS W. MILLER, Secretary. JAMES W. FLEMING, Ass't. Sec'y.
Columbus. Columbus.

MEMBERS.

	Term Expires.
THADDEUS E. CROMLEY, Ashville, Pickaway County	January, 1905
THOMAS L. CALVERT, Selma, Clark County	January, 1905
WILLIAM MILLER, Gypsum, Ottawa County	January, 1906
JEREMIAH L. CARPENTER, Carpenter, Meigs County	January, 1906
CHARLES H. GANSON, Urbana, Champaign County	January, 1907
ALFERD PUTNAM SANDLES, Ottawa, Putnam County	January, 1907
ROLDON O. HINSDALE, Wadsworth, Medina County	January, 1908
SAMUEL TAYLOR, Grove City, Franklin County	January, 1908
LINDLEY P. BAILEY, Tacoma, Belmont County	January, 1909
EDWIN L. LYBARGER, Spring Mountain, Coshocton County	January, 1909

EXECUTIVE COMMITTEE.

JEREMIAH L. CARPENTER, President. ALFERD PUTNAM SANDLES.
THOS. L. CALVERT. SAM'L. TAYLOR. THADDEUS E. CROMLEY.

FARMERS' INSTITUTE COMMITTEE.

THADDEUS E. CROMLEY, Chairman. WILLIAM MILLER.
ROLDON O. HINSDALE.

AUDITING COMMITTEE.

CHARLES H. GANSON, Chairman. LINDLEY P. BAILEY.
EDWIN L. LYBARGER.

LIST OF MEMBERS OF THE OHIO STATE BOARD OF AGRICULTURE FROM THE ORGANIZATION OF THE BOARD TO DATE.

(NOTE.—The law creating the Ohio State Board of Agriculture, enacted in 1846, provided for fifty-three members and named them. The law was amended in 1847, reducing the number of members to ten. Five members were elected each year for a term of two years until 1898, when the law was so amended as to provide for the election of two members each year for a term of five years.)

Names.	Year of Service.	Residence.
John B. Bayless	1846	Jefferson County.
Henry C. Brish	1846	Seneca County.
Frederick Bonner	1846	Greene County.
Joseph Burns	1846	Coshocton County.
John Chaney	1846	Fairfield County.
G. W. Cowden	1846	Trumbull County.
Absalom Dunn	1846	Butler County.
John Eckels	1846	Hancock County.
Elias Florence	1846	Pickaway County.
John Fuller	1846	Erie County.
Geo. W. Gibbons	1846	Muskingum County.
William Gill	1846	Pickaway County.
H. N. Gillett	1846	Lawrence County.
L. C. Goble	1846	Putnam County.
David Gregory	1846	Delaware County.
Anson Howard	1846	Champaign County.
John Johnson	1846	Miami County.
Aaron Johnson	1846	Perry County.
Greenbury Keen	1846	Portage County.
Billius Kirtland	1846	Mahoning County.
Newton Larsh	1846	Preble County.
Liba Lindley	1846	Athens County.
Jas. Loudon	1846	Brown County.
John McElderry	1846	Tuscarawas County.
Wm. McFadden	1846	Harrison County.
Beatty McFarland	1846	Jefferson County.
John Martin	1846	Columbiana County.
Isaac Moore	1846	Lake County.
Gilman C. Mudgett	1846	Paulding County.
Samuel Myers	1846	Crawford County.
Isaac Neiswanger	1846	Belmont County.
Simon Perkins	1846	Summit County.
Henry Protzman	1846	Montgomery County.
W. R. Putman, Jr.	1846	Washington County.
Felix Renick	1846	Ross County.
Jas. L. Reynolds	1846	Stark County.
Benj. Ruggles	1846	Belmont County.
Sam'l Spangler	1846	Fairfield County.
David Stevens	1846	Richland County.
Abraham Studdebaker	1846	Darke County.
Dowty Utter	1846	Clermont County.
John I. Vanmeter	1846	Pike County.
Richard Warner	1846	Medina County.
Jesse Wilson	1846	Shelby County.
J. M. Millikin	1846	Hamilton.
J. T. Pugsley	1846	Convenience.

MEMBERS OF THE STATE BOARD OF AGRICULTURE—Continued.

Names.	Years of Service, Inclusive.	Postoffice.
Allen Trimble	1846–51	Hillsboro.
M. L. Sullivant	1846–53	Columbus.
Sam'l Medary	1846–53	Columbus.
Darius Lapham	1846–50	Cincinnati.
Arthur Watts	1846–52	Chillicothe.
J. P. Kirtland	1846–48	Cleveland.
A. E. Strickle	1846–49	Wilmington.
M. B. Bateham	1847–51	Columbus.
John Codding	1847–49	Granger.
C. Springer	1848–52	Meadow Farm.
J. M. Edwards	1848–52	Canfield.
J. G. Gest	1848–54	Spring Valley.
F. R. Elliott	1849–51	Cleveland.
J. T. Pugsley	1850–51	Convenience.
S. Halloway	1850–51	St. Clairsville.
William Case	1852–53	Cleveland.
Philo Adams	1852–53	Huron.
R. W. Musgrave	1852–57	Sulphur Springs.
R. W. Steele	1853–56	Dayton.
William H. Ladd	1853–56	Richmond.
D. McIntosh	1853–54	Shalersville.
J. T. Worthington	1853–56	Chillicothe.
Joseph Sullivant	1854–55	Columbus.
John K. Greene	1854–57	Cincinnati.
James L. Cox	1854–55	Zanesville.
B. Stedman	1854–57	Cleveland.
Alexander Waddle	1855–60	South Charleston.
Abel Krum	1855–58	Cherry Valley.
Lucien Buttles	1856–59	Columbus.
G. W. Baker	1856–57	Marietta.
John M. Milliken	1857–62	Hamilton.
Luther Smith	1857–58	West Liberty.
Thomas S. Webb	1857–58	Massillon.
Norton S. Townshend	1858–63	Avon.
L. Q. Rawson	1858–59	Fremont.
James M. Trimble	1858–61	Hillsboro.
John Reber	1858–61	Lancaster.
D. E. Gardner	1859–64	Toledo.
William Dewitt	1859–64	Cleveland.
C. W. Potwin	1859–62	Zanesville.
T. C. Jones	1860–67	Delaware.
Henry B. Perkins	1860–63	Warren.
David Taylor	1861–66	Columbus.
Jacob Egbert	1862–63	Lebanon.
Nelson J. Turney	1862–69	Circleville.
D. McMillan	1863–70	Xenia.
W. R. Putnam	1863–64	Marietta.
William F. Greer	1864–67	Painesville.
James Fullington	1864–69	Irwin Station.
William B. McClung	1864–71	Troy.
James W. Ross	1865–70	Perrysburg.
R. R. Donnelly	1865–68	Wooster.
James Buckingham	1865–72	Zanesville.
J. Park Alexander	1867–70	Akron.
Norton S. Townshend	1868–69	Avon.
William Lang	1868–71	Tiffin.
D. C. Richmond	1869–74	Sandusky.
R. P. Cannon	1870–75	Aurora.

MEMBERS OF THE STATE BOARD OF AGRICULTURE—Continued.

Names.	Years of Service, Inclusive.	Postoffice.
L. G. Delano	1870–75	Chillicothe.
L. B. Sprague	1871–76	Springfield.
Simpson Harmount	1871–76	New Philadelphia.
John A. Warder	1871–76	Cleves.
W. S. Hickox	1872–73	Mansfield.
B. W. Carlisle	1872–79	Hookers Station.
Justus C. Stephens	1873–74	Kenton.
John M. Pugh	1874–79	Columbus.
L. B. Wing	1875–80	Newark.
Russell C. Thompson	1875–76	Sylvania.
Leo Weltz	1876–83	Wilmington.
D. L. Pope	1876–81	Welshfield.
Charles Smith	1877–80	Marion.
E. T. Stickney	1877–78	Republic.
A. E. Stone	1877–78	Gallipolis.
Peter Murphy	1877–80	Hughes Station.
W. N. Cowden	1878–83	Quaker City.
R. Baker	1879–82	Elyria.
Arvine C. Wales	1879–82	Massillon.
R. H. Hayman	1880–81	Portsmouth.
O. P. Chaney	1880–82	Canal Winchester.
C. D. Bailey	1881–88	Gallipolis.
J. C. Levering	1881–86	Levering.
William S. Foster	1881–88	Urbana.
L. B. Harris	1882–87	Upper Sandusky.
J. H. Brigham	1882–89	Delta.
L. N. Bonham	1883–86	Oxford.
H. Talcott	1883–87	Jefferson.
N. A. Sims	1883–85	Columbus.
T. P. Shields	1884–87	Watkins.
John Pow	1884–89	Salem.
S. H. Hurst	1884–89	Chillicothe.
J. J. Sullivan	1887–88	Millersburg.
Joseph H. Terrell	1887–88	New Vienna.
J. G. Russell	1887–90	Mt. Gilead.
H. G. Tryon	1888–91	Willoughby.
J. M. Black	1888–90	Hanover.
A. H. Kling	1889–96	Marion.
H. S. Grimes	1889–90	Portsmouth.
A. J. Clark	1889–98	Cambridge.
W. W. Miller	1889–94	Castalia.
J. W. Pollock	1890–93	Cedarville.
N. Ohmer	1890–95	Dayton.
L. G. Ely	1890–91	West Unity.
E. L. Hinman	1890–93	Columbus.
J. C. Bower	1891–98	Athens.
George Lewis	1891–94	Van Wert.
Chester Bordwell	1892–93	Batavia.
F. A. Derthick	1892–95	Mantua.
J. T. Robinson	1894–97	Rockaway.
G. Liggett	1894–1901	Watkins.
J. H. Pringle	1894–95	Cardington.
E. C. Ellis	1895–98	Crestvue.
Chester Bordwell	1895–1901	Batavia.
L. G. Ely	1896–1900	Fayette.
H. S. Grimes	1896–1900	Portsmouth.
Albert Hale	1896–99	Mogadore.

MEMBERS OF THE STATE BOARD OF AGRICULTURE—Concluded.

Names.	Years of Service, Inclusive.	Postoffice.
J. S. Stuckey	1897–1903	Van Wert.
S. H. Ellis	1898–99	Waynesville.
D. J. Green	1899–1902	Renrock.
B. P. Baldwin	1899–1903	Tiger.
Samuel Taylor	1899	Grove City.
T. E. Cromley	1900	Ashville.
T. L. Calvert	1900	Selma.
Wm. Miller	1901	Gypsum.
J. L. Carpenter	1901	Carpenter.
C. H. Ganson	1902	Urbana.
A. P. Sandles	1902	Ottawa.
R. O. Hinsdale	1903	Wadsworth.
E. L. Lybarger	1904	Spring Mountain.
L. P. Bailey	1904	Tacoma.

LIST OF OFFICERS OF THE OHIO STATE BOARD OF AGRICULTURE FROM ITS ORGANIZATION TO DATE; ALSO TABLE SHOWING PLACE OF HOLDING AND RECEIPTS OF EACH STATE FAIR.

Year	President.	Treasurer.	Secretary.	Place of Fair.	Receipts.
1846	Allen Trimble	M. L. Sullivant	Samuel Medary		
1847	Same	Same	M. B. Bateham		
1848	Same	Same	Same		
1849	M. L. Sullivant	Samuel Medary	Same		
1850	Same	Same	Same	Cincinnati	$ 8,036 18
1851	Same	Same	W. W. Mather	Columbus	8,204 09
1852	Arthur Watts	Same	Same	Cleveland	13,360 00
1853	Samuel Medary	M.L. Sullivant	Geo. Sprague	Dayton	13,996 37
1854	R. W. Musgrave	Joseph Sullivant	Same	Newark	8,824 58
1855	J. T. Worthington	Same	Same	Columbus	9,745 54
1856	William H. Ladd	Lucien Buttles	Same	Cleveland	16,634 20
1857	Alexander Waddle	Same	J. H. Klippart	Cincinnati	17,530 75
1858	John M. Milikin	Same	Same	Sandusky	9,997 70
1859	N. S. Townsend	Same	Same	Zanesville	8,958 82
1860	Alexander Waddle	Chas. W. Potwin	Same	Dayton	11,998 50
1861	Darwin E. Gardner	Same	Same	Dayton	8,036 18
1862	Thomas C. Jones	David Taylor	Same	Cleveland	11,260 64
1863	N. S. Townsend	Same	Same	Cleveland	11,142 00
1864	Nelson J. Turney	Same	Same	Columbus	12,620 54
1865	Same	Same	Same	Columbus	10,658 65
1866	William B. McClung	Same	Same	Dayton	14,035 80
1867	Daniel McMillan	Jas, Buckingham	Same	Dayton	18,692 98
1868	James Fullington	Same	Same	Toledo.	15,606 25
1869	Same	Same	Same	Toledo.	19,606 50
1870	James W. Ross	J. Park Alexander	Same	Springfield	18,252 85
1871	William Lang	Jas. Buckingham	Same	Springfield	16,460 25
1872	James Buckingham	Simpson Harmount	Same	Mansfield	19,149 45
1873	Lincoln G. Delano	Same	Same	Mansfield	22,517 50
1874	Same	Same	Same	Columbus	27,674 79
1875	R. P. Cannon	Same	Same	Columbus	20,539 30
1876	S. Harmount	J. M. Pugh	Same	Columbus	11,909 61
1877	J. B. Jamison	Same	Same	Columbus	21,151 21
1878	J. M. Pugh	L. B. Wing	Same	Columbus	11,979 50
1879	B. W. Carlisle	Same	J. W. Fleming	Columbus	30,703 35
1880	L. B. Wing	D. L. Pope	W. I. Chamberlain	Columbus	23,682 20
1881	D. L. Pope	Leo. Welts	Same	Columbus	29,706 16
1882	R. Baker	W. N. Cowden	Same	Columbus	34,082 52
1883	W. N. Cowden	L. B. Harris	Same	Columbus	38,513 78
1884	W. S. Foster	Same	Same	Columbus	33,306 48
1885	C. D. Bailey	J. C. Levering	Same	Columbus	29,796 51
1886	L. N. Bonham	L. B. Harris	Same	Columbus	30,533 17
1887	J. H. Brigham	Same	L. N. Bonham	Columbus	30,902 10
1888	John Pow	J. G. Russell	Same	Centennial year no fair	....
1889	Same	Same	Same	Columbus	19,637 41
1890	J. G. Russell	A. H. Kling	Same	Columbus	27,574 55
1891	J. M. Black	Same	Same	Columbus	33,878 64
1892	A. H. Kling	W. W. Miller	Same	Columbus	30,357 19
1893	J. W. Pollock	Same	Same	Columbus	19,350 93
1894	W. W. Miller	F. A. Derthick	Same	Columbus	27,260 25
1895	A. J. Clark	Same	W. W. Miller	Columbus	33,966 13
1896	J. C. Bower	A. J. Clark	Same	Columbus	22,531 20
1897	J. T. Robinson	J. C. Bower	Same	Columbus	30,369 48
1898	C. Bordwell	Same	Same	Columbus	31,023 36
1899	L. G. Ely	H. S. Grimes	Same	Columbus	33,749 17
1900	H. S. Grimes	L. G. Ely	Same	Columbus	31,521 35
1901	J. S. Stuckey	G. Liggett	Same	Columbus	51,576 50
1902	Samuel Taylor	T. L. Calvert	Same	Columbus	40,519 72
1903	T. E. Cromley	Same	Same	Columbus	49,292 75
1904	J. L. Carpenter	Same	Same	Columbus	....

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PROCEEDINGS

OF THE

Ohio State Board of Agriculture

For the Year 1903.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, January 15,
9:30 o'clock, p. m.

The following named gentlemen, members and members-elect of the Ohio State Board of Agriculture for 1903, met for organization:

Jonas S. Stuckey, Van Wert, Van Wert, County	Term expires Jan. 1904
Benjamin P. Baldwin, (Newton Falls, Trumbull Co.) Mahoning County	Term expires Jan. 1904
Thaddeus E. Cromley, Ashville, Pickaway County	Term expires Jan. 1905
Thomas L. Calvert, Selma, Clark County	Term expires Jan. 1905
William Miller, Gypsum, Ottawa County	Term expires Jan. 1906
Jeremiah L. Carpenter, Carpenter, Meigs County	Term expires Jan. 1906
Charles H. Ganson, Urbana, Champaign County	Term expires Jan. 1907
Alfred P. Sandles, Ottawa, Putnam County	Term expires Jan. 1907
Samuel Taylor, Grove City, Franklin County	Term expires Jan. 1908
Roldon O. Hinsdale, Wadsworth, Medina County	Term expires Jan. 1908

The oath of office was administered by J. W. Fleming, notary public, to the newly elected members, Samuel Taylor and Roldon O. Hinsdale.

Mr. Samuel Taylor acted as temporary chairman and on calling the members to order, announced as the first business, the election of a president of the board.

Mr. Stuckey nominated for president, Mr. T. E. Cromley, and there being no further nominations, the secretary was instructed to cast the vote of the board for Mr. Cromley, whereupon he was declared the duly elected president of the board for the ensuing term, and as such officer assumed the chair and called for nominations for vice-president.

Mr. Wm. Miller nominated for vice-president, Mr. B. P. Baldwin, and there being no further nominations, the secretary, by direction, cast the vote of the board for Mr. Baldwin, and he was declared unanimously elected.

For treasurer, Mr. T. L. Calvert was nominated by Mr. Carpenter and the secretary instructed to cast the vote of the board. Mr. Calvert was declared the duly elected treasurer for the ensuing term.

On motion of Mr. Carpenter it was agreed that when an adjournment is taken it be to meet on Tuesday, February 11, at 10 o'clock a. m.

The president stated that at the next meeting of the board a revision of the premium list for the State Fair of 1903 would be made, and advised members to be prepared with suggestions. He also announced that the appointment of standing committees and the assignment of departments would be announced at that time.

On motion of Mr. Taylor the board adjourned.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, February 11,
10 o'clock a. m.

The board met pursuant to adjournment, President Cromley in the chair and all members present.

The minutes of the preceding meeting, also the last meeting of 1902, were read and approved.

The president announced the appointment of standing committees and assignment of departments of the fair as follows:

EXECUTIVE COMMITTEE.

T E. Cromley, President.
J. S. Stuckey.
T. L. Calvert.
Samuel Taylor.
A. P. Sandles.

FARMERS' INSTITUTE COMMITTEE.

T. E. Cromley, Chairman.
Wm. Miller.
R. O. Hinsdale.

AUDITING COMMITTEE.

B. P. Baldwin, Chairman.
J. L. Carpenter.
C. H. Ganson.

ASSIGNMENT OF DEPARTMENTS.

First Department—Horses	C. H. Ganson, Urbana
Second Department—Cattle	J. S. Stuckey, Van Wert.
Third Department—Sheep	B. P. Baldwin, Newton Falls.
Fourth Department—Swine	A. P. Sandles, Ottawa.
Fifth Department—Poultry	A. P. Sandles, Ottawa.
Sixth Department—Farm Products	Wm. Miller, Gypsum.
Seventh Department—Fruits	Wm. Miller, Gypsum.
Seventh Department—Flowers	Wm. Miller, Gypsum.
Eighth Department—Machinery	R. O. Hinsdale, Wadsworth.
Ninth Department—Manufactures	J. L. Carpenter, Carpenter.
Tenth Department—Merchandise	J. L. Carpenter, Carpenter.
Eleventh Department—Woman's Work	Samuel Taylor, Grove City.
Twelfth Department—Fine Arts	Samuel Taylor, Grove City.

The secretary reported that several persons were in waiting and desired to be heard relative to classification and premium offers at the next State Fair.

Mr. Carpenter submitted the following, which was adopted:

"Resolved, That hereafter persons having petitions and requests to present shall, after a full hearing, be excused, when their petitions and requests will be considered and acted upon in executive session."

The secretary reported that under the authority and direction given him at the last meeting of the board he had re-appointed Mr. A. F. Burgess as chief inspector of nurseries and orchards for the term ending December 31, 1904, and that under the rules he had also appointed as assistant inspectors W. H. Steffens, of Gypsum, Ohio, and George A. Runner, of Nena, Ohio. Other appointments to be made when men are needed.

Mr. Stuckey moved that the action of the secretary in the appointments reported be approved. The motion prevailed.

On motion a recess was taken for ten minutes and after the recess the board again proceeded to business.

Mr. Ganson moved that the board endorse the application of B. P. Baldwin for the position of superintendent of the sheep department of the World's Fair at St. Louis in 1904, and heartily recommended his appointment. The motion prevailed by unanimous vote.

President Baer and Secretary Ferguson, who were in waiting, appeared before the board to represent the Montgomery County Agricultural Society in relation to matters pertaining to the granting of privileges at its annual fair and which had been under discussion at the last meeting of the board, and further consideration postponed until this meeting. The gentlemen made some general statements regarding the possibility of changing their privilege arrangements so as to conform to the rules of the State Board of Agriculture and be entitled to the per capita certificate, but were unable to say definitely what could be done until after their organization in May. The gentlemen retired, when Mr. Stuckey moved that further consideration of the matter be again postponed until the next meeting of the board.

Pending the motion a recess was taken until 1:30 p. m.

At the expiration of the recess, the board proceeded with business by hearing persons who were present to submit matters for consideration in reference to the premium list.

Mr. Cobb Gavitt made request for an extended classification of ponies.

Mr. J. W. Pollock, after thanking the board for the recognition given the Polled Durham class of cattle at the fair of last year, requested a continuance of the same classification.

Mr. C. S. Hatfield, representing the Polled Jersey class of cattle, and which had been omitted in last year's list, requested a re-instatement of the class for this year, believing that a good exhibit would be called out.

Prof. C. S. Plumb reported that the Ohio Jersey Cattle Club proposed to make some special offers in the Jersey cattle class, hoping thereby to induce a large exhibit by Ohio breeders.

Mr. R. H. Sanders petitioned the board to make a class for the Dutch Belted cattle.

Mr. Charles McIntire requested a class for fat cattle.

Mr. Bishop, representing the Ohio Merino Sheep Breeders' Association, requested a division of the Merino class and designate the divisions as *A* for the wrinkly type and *B* for the type between the wrinkly and the Delaine sheep.

Mr. Wing requested that Dorset Horned sheep be restored to the list, it having been omitted last year.

Requests were made for champion ram and ewe throughout the sheep classes, and champion boar and sow throughout the swine classes.

Mr. I. T. Cummings, representing the State Swine Breeders' Association, reported that at a recent meeting of the association a committee of four was appointed to prepare a classification for swine and urge the adoption of the same by the State Board of Agriculture. The classification agreed upon was submitted.

Mr. Cummings further urged that a judge be provided for each individual breed and that exhibitors be permitted to remove their stock from the fair grounds at 3 o'clock, p. m. the last day of the fair.

Prof. C. S. Plumb suggested that where different breeds of swine compete in one class they should be grouped: Suffolk, Small Yorkshire and Essex; Cheshire and Victoria; Large Yorkshire and Tamrocks.

Mr. K. B. Clough, of North Amherst, Ohio, requested that permission be granted for sales of swine during the coming fair, the sales to be conducted under tent and not to interfere with the competitive exhibition; a sale for each one of the four leading breeds to be conducted the day following the show of each breed, and all animals consigned to the sales to be required to be entered in the regular premium class of the fair.

Mr. James B. McLaughlin requested that grand sweepstakes in the horse department be omitted and that a sweepstakes be made for each individual breeding class.

Mr. R. J. Tussing, representing the farm product exhibits, suggested the adoption of a scale of points for judging the county displays.

Mr. Samuel Taylor stated that a general review of premiums in the woman's department was being considered and would be reported later.

After the several gentlemen had been heard they were excused and the board proceeded to regular business.

The president announced that the motion pending when a recess was taken was first in order.

Mr. Stuckey submitted the following as a substitute for the motion:

"Whereas, In the matter of withholding the certificate of the Montgomery County Agricultural Society for violation of the rules of the State Board of Agriculture in regard to privileges, the president and secretary of said society have appeared before this board, but they being unable to pledge the action of the incoming board of directors of said county, therefore,

"Resolved, That when the new board of directors of the Montgomery County Agricultural Society is organized and files with the secretary of the State Board of Agriculture satisfactory assurance in writing that the rules of the State Board of Agriculture will be strictly complied with in the future, that the secretary be authorized and directed to forward to said society the per capita certificate now withheld."

The substitute was agreed to.

Mr. T. L. Calvert, treasurer, presented his bond in the sum of twenty-five thousand dollars, as provided by the rules of the board.

On motion the bond was approved and accepted.

Mr. Carpenter submitted the following, which was unanimously adopted:

"Resolved, That the obligations of the treasurer of the board for 1902 having been faithfully discharged, it is directed that his bond for that year be returned to him with such endorsement."

On motion a recess was taken until 7:30 p. m., at which hour the board reconvened and proceeded to the transaction of business.

Mr. Ganson moved that public sales of swine be permitted during the State Fair under such regulations as the board may formulate and adopt, and provided the board shall receive five per cent. of the amount of each sale made. The motion was agreed to.

On motion of Mr. Carpenter it was agreed that in the several departments of live stock the furnishing of straw for bedding be discontinued, but that arrangements be made whereby exhibitors may purchase on the grounds at market price such straw as they may require.

Mr. Carpenter moved that the regulations relative to public sales of swine be referred to the member in charge of the swine department and the secretaries. The motion prevailed.

In the matter of request for privilege of holding horse sales on the fair grounds, as made by Mr. Hoover at the last meeting of the board, consideration of which was postponed until this meeting, Mr. Stuckey's motion at the last meeting was taken up and agreed to.

On motion the board adjourned until 9 o'clock, a. m., Thursday, February 12.

On the day and hour to which adjournment was taken, the board again convened with all members present.

The necessity for a band-stand having been explained, Mr. Calvert moved that a suitable band-stand be constructed on the fair grounds and that the matter be referred to the president and secretaries, with power to act. The motion was agreed to.

On motion of Mr. Stuckey, it was agreed that the sum of five thousand dollars be devoted to advertising the state fair.

The president and secretaries were constituted a committee on special attractions.

President Cromley, Mr. Carpenter and the secretary were instructed to take such steps as they deem advisable to secure the attendance at the forthcoming state fair of President Roosevelt, W. J. Bryan and other distinguished public men.

It was agreed that Monday, August 31, of the state fair, be designated as woman's day, and Friday, September 4, as children's day, admission to be free to women and children on their respective days.

The revision of the premium list being under consideration, Mr. Calvert moved that revision for the horse department be referred to Mr. Ganson, the member in charge, and the secretaries, with authority, if found to the best interest, to increase the list five hundred dollars as compared with last year. Motion prevailed.

On motion of Mr. Taylor, the revision of the speed list was referred to Mr. Ganson and the assistant secretary, with authority to increase one thousand dollars as compared to the list of last year.

On motion of Mr. Carpenter, it was agreed that Polled Jersey and Dutch Belted cattle be included in the premium list and that the revision of the entire cattle department be referred to Mr. Stuckey, the member in charge, and the secretaries.

On motion of Mr. Taylor, it was further directed that grand sweepstakes in the cattle department be omitted.

Mr. Taylor moved that offers be made for champion ram and champion ewe in each of the sheep breeds. The motion was not agreed to.

On motion of Mr. Ganson, it was agreed to include Dorset Horn sheep in the premium classifications.

Mr. Baldwin moved that the revision of premium list for swine and poultry be referred to Mr. Sandles, the member in charge, and the secretaries, with authority to increase the swine list two hundred dollars, if deemed advisable. The motion prevailed.

On motion of Mr. Baldwin, the sixth and seventh departments were referred to Mr. Wm. Miller, the member in charge, and the secretaries, with authority to increase the premium offers to the extent of two hundred dollars over last year's list.

Mr. Ganson moved that the premium list for the woman's department be referred to Mr. Taylor, the member in charge, and the secretaries. The motion prevailed.

On motion of Mr. Stuckey, the securing of exhibition cases and the making of necessary improvements in the woman's building, were referred to the member in charge, Mr. Taylor, and the secretary, with power to act.

On motion a recess was taken until 2 o'clock, p. m., at which hour the board reconvened and proceeded to business.

Mr. Carpenter moved that at the coming state fair premiums be offered for fat cattle. The motion was agreed to.

Mr. S. B. Rankin, executive commissioner of Ohio to world's exposition at St. Louis, was introduced and made a few remarks in explanation of what was desired from the agricultural interests of Ohio.

On motion the board adjourned to meet at the call of the president.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, June 3, 1903.
3 o'clock, p. m.

The board met pursuant to call, president Cromley in the chair and all members present except Mr. Carpenter.

The minutes of the preceding meeting were read and approved.

Mr. Ganson moved that the action of the board at the last meeting, relative to straw for the live stock departments, be so modified that the board shall provide for the bedding of stalls and pens on the arrival of animals, and that bedding required thereafter be provided by exhibitors at their own expense, which was adopted.

Mr. Brentlinger appeared before the board in the interest of an Ohio agricultural product exhibit at the St. Louis Exposition in 1904. It was explained to the gentleman that the board had no funds for the purpose; that the appropriations made by the state were entirely within the control of the Ohio commission, of which Hon. S. B. Rankin is the executive commissioner, to whom Mr. Brentlinger was referred.

Secretary Miller made report of a conference with the Ohio world's fair commission and explained the purpose of that body in the expenditure of the state appropriation made, and also the prospect for an agricultural and wool exhibit.

On motion the further consideration of matters pertaining to the St. Louis exposition was postponed until the evening session.

On motion of Mr. Hinsdale, a recess was taken until 8 o'clock, p. m.

The board re-assembled at the hour to which a recess was taken, all members being present.

The secretary announced that it was the desire of the board of control of the Ohio Agricultural Experiment Station that the co-operation existing between that board and the State Board of Agriculture, in building up the agriculture of the state, be maintained and broadened, and for the purpose of consultation and furtherance of cordial relations, requested that a joint meeting of the two boards, together with farmers' institute workers, be held at Wooster, Ohio, on the 18th and 19th of the present month, upon which occasion the State Board of Agriculture is invited to become the guests of the board of control of the Experiment Station.

On motion the invitation was accepted.

The secretary presented the applications that had been filed for the position of chief of police at the coming state fair.

Mr. Stuckey moved that the appointment of a chief of police be referred to a committee consisting of the president and secretaries. The motion prevailed.

The secretary reported the improvements made and work in progress at the state fair grounds, all agreeable to reference made by the board.

The committee on special attractions made verbal report of its action for the coming fair and announced the engagement of John H. Sullivan, (Broncho John,) and his company for the presentation of his "Wild West" performances.

On motion of Mr. Ganson, the action of the committee was approved.

Mr. Burgess, the chief inspector of nurseries and orchards, made a verbal report of the work accomplished and in progress in his division of the department. The secretary supplemented the report of the chief inspector by explanations relative to the policy being pursued in conducting the work.

Mr. Stuckey moved that the matter of prosecutions for failure to comply with the law in regard to treatment of orchards, be referred to Mr. Wm. Miller and the secretary, with power to act.

Mr. Sandles submitted the following which was adopted:

"Whereas, To preserve the dignity and importance of Ohio among the states of the union and the countries of the world, it is essential that there be displayed at the Louisiana Purchase Exposition, to be held at St. Louis in 1904, a representative exhibit of the great agricultural resources of the state, and

"Whereas, The Ohio commission, of which Hon. S. B. Rankin is the executive commissioner, has made no provision for such an exhibit, but expresses the opinion that it should be done, could funds sufficient be made available for the expense, the state appropriation already made and to be expended by said commission being wholly required for the purpose of erecting a building on the St. Louis grounds, and for the entertainment of guests, therefore,

"Resolved, That any action that may be taken by the Ohio commission, or guarantee of expense made by it for the purpose of installing and maintaining at the Louisiana Purchase Exposition of 1904, a creditable and representative exhibition of the agricultural interests of Ohio, will receive the hearty support of this board, as well as its influence in the matter of securing an appropriation to reimburse for any funds so advanced by said commission."

On motion of Mr. Wm. Miller it was agreed that for the forthcoming state fair the members of the board be empowered to appoint the necessary expert judges for their respective exhibition departments.

Mr. Calvert stated that Mr. Cobb Gavitt, an exhibitor at the fair, had been in the habit of bringing on the grounds quantities of cider which he dealt out promiscuously, and he therefore moved that the secretary write Mr. Gavitt requesting him to discontinue the practice.

Mr. Stuckey moved to amend the motion by referring the matter to the member in charge of the horse department. The amendment was agreed to, whereupon the original motion as amended, prevailed.

On request of the president, the members made report of progress in their respective departments of the fair.

On motion of Mr. Baldwin, the member in charge of the seventh department was authorized to contract for the proper decoration of the building.

The matter of securing a permanent mineral exhibit of the state was referred to Mr. Carpenter.

The president made report of his conference with Hon. Wm. J. Bryan relative to visiting the fair of the present year, stating that the gentleman looked favorably upon the matter, but suggested a further conference in August when he would know more definitely concerning his engagements.

On motion the board adjourned to meet at Wooster, O., June 18 and 19.

WOOSTER, O., June 19, 1903,
8 o'clock, a. m.

The board was called together by President Cromley. Members all present except Messrs. Carpenter and Ganson.

The secretary reported the work completed and in progress on the state fair grounds, also the status of insurance on buildings, whereupon an adjournment was taken to meet at the call of the president.

ADMINISTRATION BUILDING,
STATE FAIR GROUNDS,
COLUMBUS, O., Aug. 29, 1903.

The board met at 10 o'clock, a. m., on call of President Cromley; members present, Messrs. Cromley, Baldwin, Stuckey, Miller, Calvert, Ganson and Hinsdale.

Assistant Secretary J. W. Fleming, was absent because of illness.

The secretary read the minutes of the last meeting of the board, which were approved.

President T. E. Cromley reported for the special committee which was authorized by the board to appoint a chief of police for the State Fair of 1903, and announced the appointment of Mr. John J. Mahoney. On motion of Mr. Stuckey the appointment was approved.

Mr. Cromley made detailed report for the special committee appointed by the board (T. E. Cromley, J. L. Carpenter and W. W. Miller) to invite President Roosevelt, W. J. Bryan, and other representatives of the two great political parties of the country, to be present at, and take part in the celebration of the centennial of Ohio during the State Fair of 1903. Mr. Cromley reported that Hon. W. J. Bryan had accepted the invitation and would be present Wednesday, September 2, but that President Roosevelt was unable to accept the invitation extended by the committee, but that he was so interested in the work of the board that he would send a special representative in the person of Hon. Leslie M. Shaw, Secretary of the United States Treasury. He reported further that invitations to attend the fair had been accepted by Senator M. A. Hanna, Colonel Myron T. Herrick, General Charles Dick, Governor George K. Nash, Hon. John H. Clarke, candidate for election as United States Senator, and others, and that programs had been arranged for holding meetings on Wednesday, September 2, and Friday, September 4; the first to to be presided over by Governor Nash, the second by Hon. Lawrence T. Neal.

On motion of Mr. Stuckey, the action of the committee was heartily approved by the board.

Secretary Miller made detailed report of all improvements made on fair ground buildings, preparatory to the holding of the State Fair of 1903. On motion of Mr. Baldwin the report of the secretary and the work done by him were approved.

Secretary Miller suggested the importance of constructing large cisterns on different parts of the state fair grounds to be used for the purpose of protection against fire. On motion of Mr. Ganson, the location and building of cisterns was referred to the president and secretary of the board with power to act.

The secretary stated that The Ohio Fuel Supply Company, of Columbus, Ohio, had made application for permission to lay gas mains in the street along the south front of the state fair grounds, fifteen feet from the fence, from the southeast to the southwest corners of said grounds, thence along the strip of land lying on the west border of the fair grounds and between the fences maintained by the State Board of Agriculture and The C., C., C. & St. L. Railroad Company, to a point about fifty feet north of the "Big Four" station on west side of fair grounds. On motion of Mr. Ganson the matter of granting right of way to the Ohio Fuel Supply Company was referred to the president and secretary of the board, and they were authorized to act for, and in behalf of the board.

The secretary reported that some of the concessionaries holding dining and lunch privileges during the state fair had complained that meal tickets issued by the board were used in securing meals from parties not holding concessions from the board, and living outside of, and adjacent to, the fair grounds. On motion of Mr. Calvert, the secretary was directed to pay for, and redeem, meal tickets issued by the members and officers of the State Board of Agriculture when issued to, and presented by, the concessionaries having meal and lunch privileges on the state fair grounds, and to no others.

At 12 o'clock, m., the board adjourned to meet at the call of the president.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, September 22, 1903.

The board met pursuant to call, President Cromley in the chair and all members present.

The minutes of the preceding meeting were read and with slight correction, approved.

The treasurer submitted a financial statement for the year, up to September 22, which, on motion of Mr. Ganson, was accepted and ordered to be placed on file.

The secretary presented a communication from Mr. Chas. Stuckey, urging the permission of the board to allow cattle sales to be held on the state fair grounds during the year.

Mr. J. S. Stuckey moved that the secretary be instructed to notify Mr. Chas. Stuckey that the board declined to permit cattle sales on the state fair grounds under the conditions mentioned in his communication. The motion prevailed, Mr. Ganson in the negative.

The secretary called attention to the insurance on fair ground buildings that would soon expire, reporting that since the placing of present insurance there had been an increase in rate of 25 per cent. and suggested that a re-inspection of the property be requested, believing a special rate was warranted for the class of property to be insured.

Mr. Ganson moved that the matter be referred to the secretary with authority to re-insure as the policies expire, and the motion was agreed to.

The president and secretary to whom was referred the matter of allowing the Ohio Fuel and Supply Co. to lay gas pipes across the fair grounds, reported that a contract had been entered into under which said company is granted the right, the board securing two taps for use of gas at regulation prices, meters and regulators to be furnished free, and also the payment to the board of two hundred and sixty dollars. The contract was read, whereupon Mr. Baldwin moved that it be approved, which motion prevailed.

The committee to whom was referred the construction of cisterns on the fair grounds, made a partial report, and, on motion, was continued.

On motion a recess was taken until 1:30 p. m.

At the expiration of the recess the board re-convened.

The standing commitee on farmers' institutes submitted the following report:

COLUMBUS, O., September 22, 1903.

To the President and Members of the Ohio State Board of Agriculture.

GENTLEMEN:—

We, the undersigned members of your Farmers' Institute committee, met at the department of agriculture yesterday, the 21st instant, for the purpose of considering applications for farmers' institutes to be held under the management of the State Board of Agriculture for the coming institute season. After a careful consideration of all petitions, reports and communications, we recommend that institutes be established at the following named places for the season of 1903-1904, specific dates for the same to be fixed by Secretary Miller:

County and Town.

ADAMS—
Cherryfork,
Peebles,
Wamsley.

ALLEN—
Beaverdam,
Delphos,
Herring,
Spencerville.

ASHLAND—
Loudonville,
Nova.

ASHTABULA—
Andover,
Geneva,
Orwell,
Pierpont.

ATHENS—
Albany,
Amesville,
Athens,
Coolville.

AUGLAIZE—
Buckland,
Cridersville,
Uniopolis.

BELMONT—
Barnesville,
Colerain,
Lloydsville,
Morristown.

BROWN—
Fayetteville,
Mt. Orab,
Russelville.

BUTLER—
Monroe,
Oxford,
Ross,
Sevenmile.

County and Town.

CARROLL—
Carrollton,
Magnolia.

CHAMPAIGN—
Mingo,
Westville.

CLARK—
Catawba,
New Carlisle,
Pitchin,
Tremont City.

CLERMONT—
Laurel,
Owensville.

CLINTON—
Blanchester,
Wilmington.

COLUMBIANA—
Damascus,
Lisbon,
New Waterford.

COSHOCTON—
Tiverton,
West Lafayette.

CRAWFORD—
Bucyrus,
Galion,
New Washington.

CUYAHOGA—
Euclid,
Olmstead Falls,
Strongsville,
Warrensville.

DARKE—
Arcanum,
Gettysburg,
New Madison,
Versailles.

DEFIANCE—
Defiance,
Hicksville.

County and Town.

DELAWARE—
Delaware,
Sunbury.

ERIE—
Berlin Heights,
Castalia,
Milan.

FAIRFIELD—
Amanda,
Basil,
Carroll,
Pleasantville.

FAYETTE—
Goodhope,
Jeffersonville.

FRANKLIN—
Groveport,
Hilliard,
Pleasant Corners,
Westerville.

FULTON—
Delta,
Wauseon.

GALLIA—
Kyger,
Thurman.

GEAUGA—
Burton.

GREENE—
Alpha,
Cedarville,
Jamestown.

GUERNSEY—
Antrim,
Cambridge,
Cumberland,
Quaker City.

County and Town.

- HAMILTON—
  - Blueash,
  - Harrison,
  - Mt. Healthy,
  - Newtown.
- HANCOCK—
  - Arcadia,
  - McComb,
  - Mt. Blanchard,
  - Rawson.
- HARDIN—
  - Ada,
  - Forest.
- HARRISON—
  - Freeport.
- HENRY—
  - Deshler,
  - Malinta.
- HIGHLAND—
  - Buford,
  - Leesburg,
  - Lynchburg.
- HOCKING—
  - Laurelville,
  - Logan.
- HOLMES—
  - Holmesville,
  - Killbuck.
- HURON—
  - East Townsend,
  - Monroeville,
  - North Fairfield.
- JACKSON—
  - Camba,
  - Cove,
  - Jackson.
- JEFFERSON—
  - Mt. Pleasant,
  - Richmond,
  - Smithfield.
- KNOX—
  - Democracy,
  - Esto.
- LAKE—
  - Painesville,
  - Willoughby.

County and Town.

- LAWRENCE—
  - Labelle,
  - Rockwood,
  - Wilgus.
- LICKING—
  - Alexandria,
  - Brownsville,
  - Croton,
  - Jersey.
- LOGAN—
  - Bellefontaine,
  - Rushsylvania.
- LORAIN—
  - Copopa,
  - North Ridgeville,
  - Rochester.
- LUCAS—
  - Monclova,
  - Richfield Center,
  - Sylvania,
  - Whitehouse.
- MADISON—
  - London,
  - West Jefferson.
- MAHONING—
  - Berlin Center,
  - Canfield,
  - North Jackson,
  - North Lima.
- MARION—
  - Caledonia,
  - Marion.
- MEDINA—
  - Chatham,
  - Sharon Center.
- MEIGS—
  - Chester,
  - Dyesville,
  - Racine.
- MERCER—
  - Fort Recovery,
  - Neptune.
- MIAMI—
  - Bethel,
  - Piqua,
  - Troy,
  - West Milton.
- MONROE—
  - Beallsville.

County and Town.

- MONTGOMERY—
  - Brookville,
  - Centerville,
  - Germantown,
  - Vandalia.
- MORGAN—
  - Chesterhill,
  - Malta.
- MORROW—
  - Chesterville,
  - Schauck.
- MUSKINGUM.
  - Gaysport,
  - New Concord,
  - Rix Mills,
  - Roseville.
- NOBLE—
  - Sharon.
- OTTAWA—
  - Elmore,
  - Port Clinton.
- PAULDING—
  - Haviland,
  - Oakwood.
- PERRY—
  - Glenford,
  - Sayre,
  - Unity.
- PICKAWAY—
  - Ashville,
  - Tarlton,
  - Williamsport.
- PIKE—
  - Idaho,
  - Piketon.
- PORTAGE—
  - Garrettsville,
  - Randolph.
- PREBLE—
  - Camden,
  - Eldorado.
- PUTNAM—
  - Leipsic,
  - Ottawa,
  - Rimer.
- RICHLAND—
  - Adario,
  - Bellville,
  - Butler,
  - Lucas.

County and Town.

ROSS—
Bainbridge,
Frankfort,
Kingston,
South Salem.

SANDUSKY—
Bellevue,
Clyde,
Fremont.

SCIOTO—
Haverhill,
Mt. Joy,
Scioto.

SENECA—
Bloomville,
Fostoria,
Greenspring,
Tiffin.

SHELBY—
Jackson Center,
Sidney.

STARK—
Alliance,
Canal Fulton,
Marlboro,
New Berlin.

County and Town.

SUMMIT—
Ghent,
Nimisila,
North Springfield,
West Richfield.

TRUMBULL—
Churchill,
Fowler,
Mesopotamia,
Newton Falls.

TUSCARAWAS—
Baltic,
Gnadenhutten,
New Philadelphia,
Strasburg.

UNION—
Marysville,
Richwood.

VAN WERT—
Convoy,
Van Wert,
Venedocia.

County and Town.

VINTON—
New Plymouth.

WARREN—
Morrow,
Waynesville,

WASHINGTON—
Bartlett,
Lowell,
Watertown.

WAYNE—
Creston,
Lattasburg,
Wooster.

WILLIAMS—
Montpelier,
West Unity.

WOOD—
Bloomdale,
Bowling Green,
Prairie Depot,
Tontogany.

WYANDOT—
Carey,
Upper Sandusky.

We further recommend the appointment of the following named gentlemen to serve as lecturers at the various institutes to be held under the management of the State Board of Agriculture:

Allen, F. L., Kinsman, Trumbull county.
Baldwin, S. J., Tallmadge, Summit county.
Begg, John, Columbus Grove, Putnam county.
Brigham, J. S., Bowling Green, Wood county.
Chamberlain, W. I., Hudson, Summit county.
Cook, Wm. M., Camden, Preble county.
Derthick, F. A., Mantua, Portage county.
Dobie, J. Al., Gutman, Auglaize county.
Dunlap, R. W., Kingston, Ross county.
Farnsworth, W. G., Waterville, Lucas county.
Goddard, L. H., Washington C. H., Fayette county.
Gordon, J. F., Jamestown, Greene county.
Houskeeper, G. C., Bowling Green, Wood county.
Laylin, T. C., Norwalk, Huron county.
McIntire, Chas., Chandlersville, Muskingum county.
Miller, H. P., Sunbury, Delaware county.
Montgomery, Cary W., Licking county.
Rathbun, Rei, Springfield, Clark county.

Roudebush, Lowell, Nicholsville, Clermont county.
Scott, Geo. E., Mt. Pleasant, Jefferson county.
Shawver, John L., Bellefontaine, Logan county.
Snyder, E. P., Monroeville, Huron county.
Spencer, L. G., Nutwood, Trumbull county.
Strode, S. E., Westland, Morgan county.
Thomas, M. C., Mingo, Champaign county.
Wagner, C. R., Williamstown, Hancock county.
Wallace, R. H., Chillicothe, Ross county.
White, A. L., Norwich, Muskingum county.
White, R. Y., Chandlersville, Muskingum county.
Wing, J. E., Mechanicsburg, Champaign county.

T. E. Cromley,
R. O. Hinsdale, } *Committee.*
Wm. Miller,

On motion of Mr. Ganson, the report was adopted.

The secretary submitted for the consideration of the board, the question of establishing a State Normal Institute for the instruction and education of institute lecturers. Letters on the subject were read from F. E. Dawley, the New York director of institutes, and from G. C. Creelman, the director of institutes at Toronto. The subject was very generally discussed, but no definite action was taken.

Dr. Paul Fischer appeared before the board and made a verbal report of his work as veterinarian to the state board of live stock commissioners, citing the cases of outbreak of diseases among domestic animals and the steps taken to suppress and eradicate the same.

On motion of Mr. Carpenter, the board adjourned to meet at the call of the president.

SHERMAN HOUSE,
CHICAGO, ILLS.,
Monday, November 30, 7:30 p. m., 1903.

The board met pursuant to call, President Cromley in the chair and all members present except Mr. J. L. Carpenter, who was absent by reason of sickness in his family.

The president requested the secretary to present any memoranda of business he might have to bring before the board. The following was presented:

"VAN WERT, O., November 30, 1903.

To the Members of the State Board of Agriculture of Ohio:

GENTLEMEN:—Owing to the fact of having been elected a member of the 76th general assembly of Ohio, I herewith tender my resignation as a member of your honorable body. Said resignation to take effect January 1st, 1904.

Respectfully,
J. S. STUCKEY."

Mr. Ganson moved that the resignation of Mr. Stuckey be accepted. The members expressed their appreciation of the services of Mr. Stuckey as a member of the board, and while regretting his severance of membership, congratulated him on his election to the general assembly; thereupon the motion of Mr. Ganson was agreed to.

The secretary reported the insurance placed on state fair ground buildings, as per instructions of the board; settlement with the Columbus Board of Trade under the contract for holding state fair of 1901, and agreeable to action of the board taken January 28, 1902.

On motion of Mr. Ganson, the action of the secretary in these several matters was approved.

On motion of Mr. Stuckey, Mr. B. P. Baldwin was delegated to represent the board in the meeting of the American Shorthorn Breeders' Association to be held Wednesday evening, December 2, and the assistant secretary was instructed to prepare the proper credentials.

The secretary called attention to certain buildings and improvements that were still very much needed on the state fair grounds. The matters were very fully discussed, whereupon Mr. Ganson moved that the president and secretary be directed to make an estimate of the amount of money that will be required to make the needed additions and improvements, and request the incoming general assembly to make a direct appropriation of the amount. The motion was agreed to.

On motion, the board adjourned to meet at the call of the president.

DEPARTMENT OF AGRICULTURE,
COLUMBUS, January 11, 1904.
7:30 o'clock, p. m.

The board met pursuant to call, members all present except President Cromley and Mr. Sandles. Vice-President Baldwin occupied the chair. The minutes of the preceding meeting were read and approved.

The assistant secretary presented a statement of the financial transactions for the year 1903, and Mr. Carpenter, thereupon, as member of the auditing committee, submitted the report of that committee.

On motion of Mr. Taylor, the financial statement was approved and the report of the auditing committee adopted, and both ordered to be read at the annual meeting, January 14, and incorporated in the proceedings of that meeting.

The board having learned with very deep regret of the illness of President T. E. Cromley, preventing his participation in this and the annual meetings, and also of the illness of Ex-President A. H. Kling, directed that the secretary address a communication to each of the gentlemen expressing the sympathy of the board and its hope for their speedy recovery.

On motion of Mr. Calvert, the board adjourned to meet at the call of the president.

DEPARTMENT OF AGRICULTURE,
4:30 p. m., January 12.

The board convened at the call of the president. Mr. S. B. Rankin and Mr. Wm. F. Burdell, of the Ohio commission, Louisiana Purchase Exposition, met with the board to discuss matters pertaining to exhibits from Ohio to represent agriculture and the allied interests.

Mr. Burdell explained the position of the Ohio commission regarding its duties and powers, stating that if state collective exhibits were secured, some further provision would have to be made by the general assembly. Mr. Rankin stated that he desired very much that exhibits should be made and believed the general assembly would provide the necessary means if requested to do so.

After the gentlemen from the Ohio commission had retired, Mr. Farnsworth, representing the executive committee of the State Horticultural Society, presented a petition from said committee urging the establishment of a "division of horticulture" in the state department of agriculture.

On motion, the petition was ordered placed on file to be called up on request of Mr. Wm. Miller.

DEPARTMENT OF AGRICULTURE,
January 14, 7:30 o'clock, p. m.

The State Board of Agriculture of 1903, was convened for the transaction of any unfinished business that might be necessary prior to the organization for 1904.

The minutes of the two preceding meetings were read and approved.

Mr. Carpenter took occasion to refer to the retiring members of the board. Hon. J. S. Stuckey, who had been elected a member of the general assembly, and Mr. B. P. Baldwin, who had declined to become a candidate for re-election to the board as members who had been faithful workers and most courteous gentlemen, performing every duty devolving upon them; gentlemen whose judgment in the affairs of the board had always been sound and whose advice and fellowship he had always highly appreciated. Mr. Carpenter while regretting the severance of these official relations with the retiring members, rejoiced that friendship and fellowship would continue unbroken and be ever highly prized.

Mr. Hinsdale, Mr. Ganson, Secretary Miller and others of the board gave similar expressions of high regard for the retiring members, Mr. Stuckey and Mr. Baldwin.

Mr. Stuckey was not present. Mr. Baldwin responded to the expressions of commendation and friendship, closing his remarks by assurances of his continued interest and aid in the work of the board and the agricultural department.

On motion of Mr. Ganson, the board adjourned.

ATTEST: W. W. MILLER, *Secretary*.
J. W. FLEMING, *Assistant Secretary*.

CROP AND LIVE STOCK STATISTICS

AS ESTIMATED BY THE

Ohio Department of Agriculture

From Returns Received from its Corps of Regular Township Crop Correspondents During the Season of 1903.

The Department of Agriculture, under its system of crop and live stock reporting, provides for a report each month, based on information received from a regular corps of correspondents representing the several townships of the State.

The object of the monthly reports is to furnish to farmers and others interested, estimates of area and the condition and growth of crops from the planting to the harvest, with a final estimate of total product in bushels, tons or pounds; also the numbers and condition of live stock.

The information contained in these monthly reports comes at a time to make it of practical value to the farmer in determining the disposition of his several crops and the distribution of his land to following crops. The reports are simply plain facts, as received from the correspondents, their figures being averaged for each township and county and for the State, with such conclusions in final outcome as are warranted by the estimates given.

Published herein are such of the monthly crop reports as have reference to acreage or bushels figured out in total. The collection, tabulation, computation of results, publication and distribution of the monthly crop reports involve a great deal of careful work on the part of the Department, and some expense to the State, but the work is of great importance to the agricultural interests and to the people in general and the expense involved is very slight compared to benefits derived.

Following the monthly crop reports will be found tables showing wheat and corn production, from 1850 to 1903, inclusive, with range of price and average price, and the same by series of ten years; also production and prices of other crops.

Following these tables are given the agricultural statistics for the previous year as returned to the Department by the county auditors, and are valuable as matters of references or for purposes of comparison.

OFFICIAL REPORT

OF THE

OHIO DEPARTMENT OF AGRICULTURE

ON THE

Condition of Wheat and Distribution of Live Stock, March 1, 1903.

The estimated condition of wheat, as averaged from returns received from the regular township crop correspondents, is shown in the following report, which also shows the distribution of the different breeds of live stock:

WHEAT—Condition compared with an average.............. 94 per cent.

DISTRIBUTION OF THE BREEDS OF SHEEP:

Merinos	6.93	“
Grade Merinos	13.64	“
Delaine Merinos	3.79	“
Grade Delaine Merinos	5.81	“
French Merinos	.56	“
Grade French Merinos	.83	“
Cotswolds	3.09	“
Grade Cotswolds	3.32	“
Oxford Downs	1.28	“
Grade Oxford Downs	1.56	“
Shropshire Downs	7.83	“
Grade Shropshire Downs	12.67	“
Hampshire Downs	.25	“
Grade Hampshire Downs	.28	“
South Downs	4.33	“
Grade South Downs	4.55	“
Lincolns	.16	“
Grade Lincolns	.16	“
Leicesters	.22	“
Grade Leicesters	.49	“
Dorset Horned	.21	“
Grade Dorset Horned	.21	“
Other Pure Breeds	.49	“
Grades of Other Pure Breeds	1.34	“
Mixed Bloods	26.00	“

NUMBER OF STALLIONS REPORTED FROM 582 TOWNSHIPS:

Thoroughbreds (Running Horses)	93
Trotting Stock	643
French Draft	456
English Draft	269
Other Pure Breeds	205
Unknown Breeding	634

DISTRIBUTION OF THE BREEDS OF CATTLE:

Shorthorns	18.35	per cent.
Devons	.52	"
Herefords	1.71	"
Polled Durhams	2.00	"
Aberdeen-Angus	1.56	"
Red Polls	1.99	"
Galloways	.24	"
Jerseys	11.94	"
Guernseys	.36	"
Holsteins	4.07	"
Polled Jerseys	.32	"
Other Pure Breeds	1.77	"
Grades	33.78	"
Natives	21.39	"

DISTRIBUTION OF THE BREEDS OF SWINE:

Berkshires	10.42	per cent.
Poland Chinas	35.24	"
Chester Whites	14.81	"
Duroc Jerseys	6.46	"
Victorias	.20	"
Suffolks	.39	"
Yorkshires	.71	"
Essex	.35	"
Cheshires	.25	"
Mixed or Unknown	31.17	"

Reports from most of the counties indicate that wheat had ample snow protection during the extremely cold weather that occurred in February, and consequently the plants have suffered but little from alternate freezing and thawing. A gain of one point is shown since January 1, this being 32 points higher than wheat condition as reported March 1, 1902. A few correspondents report some damage to wheat by fly and grub.

Stock of all kinds is generally reported in good condition.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE CONDITION OF WHEAT AND THE DISTRIBUTION OF LIVE STOCK, MARCH 1, 1903.

Counties.	Wheat.	Per cent. of the different breeds of sheep.			
	Condition compared with an average.	Merinos.	Grade Merinos.	Delaine Merinos.	Grade Delaine Merinos.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	90	15	5	5	...
Allen	88	3	7	..	4
Ashland	98	..	5	1	17
Ashtabula	87	8	2	2	13
Athens	99	19	28	3	5
Auglaize	88	2	3	..	1
Belmont	95	12	25	5	15
Brown	95	18	11	3	..
Butler	95	2	..	..	..
Carroll	96	9	21	8	21
Champaign	93	3	7	..	3
Clark	90	2	10	..	2
Clermont	96	..	1	..	..
Clinton	104	19	20	10	5
Columbiana	104	3	19	1	12
Coshocton	93	1	37	4	18
Crawford	82	6	5	3	8
Cuyahoga	95	..	13	1	..
Darke	86	..	1	..	..
Defiance	89	..	5	1	1
Delaware	88	8	23	5	11
Erie	98	..	13	3	..
Fairfield	90	11	16	..	..
Fayette	100	13	13	1	1
Franklin	90	10	19	2	4
Fulton	99	3	7	2	3
Gallia	93	7	13	10	3
Geauga	100	..	10	..	..
Greene	100	8	15	10	17
Guernsey	100	13	54	9	15
Hamilton	95	..	5	..	..
Hancock	98	2	10	..	5
Hardin	103	2	6	1	2
Harrison	93	15	24	15	24
Henry	75	10	30	..	..
Highland	93	5	4	3	5
Hocking	108	15	35	5	10
Holmes	104	9	17	9	10
Huron	85	3	13	5	10
Jackson	92	..	1	..	..
Jefferson	104	32	24	8	1
Knox	98	7	12	9	30
Lake	100	10	25	..	..
Lawrence	90	2	7	..	..
Licking	93	16	19	10	8
Logan	95	1	5	6	23
Lorain	85	3	5	3	8
Lucas	100	..	..	..	..
Madison	93	9	19	..	7
Mahoning	97	32	22	3	2
Marion	91	5	12	11	8
Medina	91	1	15	3	8
Meigs	98	13	27	12	10
Mercer	100	..	..	..	..
Miami	90	..	3	3	..
Monroe	90	25	..	25	..
Montgomery	90	12	13	..	..
Morgan	102	10	27	10	22
Morrow	97	4	14	9	19
Muskingum	95	10	30	4	16
Noble	105	5	10	9	12
Ottawa	93	42	25	..	..
Paulding	94	..	2	6	1

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Wheat.	Per cent. of the different breeds of sheep.			
	Condition compared with an average.	Merinos.	Grade Merinos.	Delaine Merinos.	Grade Delaine Merinos.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Perry	92	8	38	4	13
Pickaway	99	3	32	..	..
Pike	100	..	3	7	5
Portage	95	1	15	1	3
Preble	90	..	2	..	..
Putnam	85	2	2	1	..
Richland	87	2	24	8	6
Ross	100	..	2	..	..
Sandusky	79	7	2	11	4
Scioto	90	5	..	..	..
Seneca	81	5	6	6	5
Shelby	90	..	..	5	25
Stark	100	4	3	1	1
Summit	84	..	3	..	4
Trumbull	95	..	10	..	..
Tuscarawas	98	4	13	..	3
Union	99	10	20	22	..
Van Wert	80	6	11	..	..
Vinton	105	18	37	2	2
Warren	90	2	7	..	..
Washington	98	26	25	5	7
Wayne	92	3	6	1	4
Williams	100	3	8	1	3
Wood	86	1	9	..	6
Wyandot	90	5	53	..	..
Average per cent	.94	6.93	13.64	3.79	5.81

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Per cent. of the different breeds of sheep.						
	French Merinos.	Grade French Merinos.	Cotswolds.	Grade Cotswolds.	Oxford Downs.	Grade Oxford Downs.	Shropshire Downs.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	..	..	6	..	6	..	6
Allen	..	1	..	1	4	10	21
Ashland	..	..	3	8	..	..	4
Ashtabula	..	..	1	6	..	..	18
Athens	..	..	8	..	..	3	1
Auglaize	..	..	..	1	..	..	18
Belmont	..	2	1	4	..	..	..
Brown	..	..	2	3	1	10	8
Butler	..	..	7	2	18	2	..
Carroll	..	..	2	..	..	3	3
Champaign	..	2	7	..	..	..	10
Clark	2	2	1	1	..	..	5
Clermont	..	..	14	30	..	..	..
Clinton	..	..	2	..	1	..	11
Columbiana	2	2	1	5	2	3	2
Coshocton	1	3	1	3	..	..	4
Crawford	..	..	1	2	..	..	12
Cuyahoga	..	..	2	5	..	..	8
Darke	..	..	2	3	1	3	16
Defiance	3	..	2	1	5	3	14
Delaware	1	1	2	2	..	2	5
Erie	..	..	..	..	3	3	3
Fairfield	..	..	4	1	5	..	18
Fayette	..	..	2	..	2	..	7
Franklin	..	..	1	1	2	1	8
Fulton	..	..	..	..	1	3	14
Gallia	..	1	2	..	..	..	..
Geauga	..	..	..	..	10	10	..
Greene	5	..	15	2	..	..	..
Guernsey	..	..	..	..	..	..	..
Hamilton	..	..	5	10	..	..	30
Hancock	..	..	1	1	..	..	5
Hardin	2	10	..	..	..	..	1
Harrison	..	..	1	1	..	..	2
Henry	..	..	..	..	..	..	10
Highland	1	3	8	1	6	1	7
Hocking	..	..	5	2	..	..	..
Holmes	..	..	3	3	1	3	19
Huron	1	..	1	4	1	1	3
Jackson	..	..	17	10	..	..	4
Jefferson	1	..	3	4	..	..	8
Knox	..	..	..	..	..	..	2
Lake	..	..	5	10	..	..	10
Lawrence	..	..	..	4	..	..	33
Licking	..	1	4	..	..	..	12
Logan	1	2	3	3	..	16	20
Lorain	1	3	2	1	1	1	6
Lucas	..	..	5	10	..	..	5
Madison	..	..	..	5	..	..	12
Mahoning	..	..	8	6	..	..	4
Marion	1	2	4	3	..	..	17
Medina	..	..	7	1	2	8	4
Meigs	2	8	..	..	..	..	3
Mercer	..	..	3	9	..	..	15
Miami	..	..	2	3	5	1	8
Monroe	..	..	..	..	..	..	..
Montgomery	2	10	3	5	..	..	5
Morgan	1	3	2	1	..	..	1
Morrow	3	3	1	2	1	1	2
Muskingum	..	..	..	1	..	..	1
Noble	2	2	..	..	..	..	..
Ottawa	..	..	5	..	..	..	18
Paulding	6	..	..	..	1	5	11
Perry	..	..	3	5	2	7	1
Pickaway	..	..	3	5	..	..	14
Pike	..	..	7	10	..	..	..

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Per cent. of the different breeds of sheep.						
	French Merinos.	Grade French Merinos.	Cotswolds.	Grade Cotswolds.	Oxford Downs.	Grade Oxford Downs.	Shropshire Downs.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Portage	..	1	..	2	1	2	2
Preble	..	..	3	12	..	7	..
Putnam	..	..	10	3	3	4	6
Richland	1	..	6	2	2	1	13
Ross	..	..	..	..	..	..	19
Sandusky	..	1	4	3	..	..	21
Scioto	..	..	3	..	..	..	2
Seneca	..	8	12	1	..	..	11
Shelby	..	..	..	20	..	..	10
Stark	1	1	4	3	6	3	2
Summit	..	..	2	8	4	10	2
Trumbull	..	..	10	20	..	..	..
Tuscarawas	3	..	1	..	1	2	10
Union	5	..	2	5	..	..	1
Van Wert	..	..	..	..	..	..	5
Vinton	..	..	..	..	..	..	3
Warren	..	8	3	..	10	..	3
Washington	..	..	..	..	..	..	3
Wayne	..	2	9	4	..	..	11
Williams	1	..	6	6	3	4	12
Wood	..	..	1	1	6	4	31
Wyandot	..	..	..	..	..	..	27
Average per cent	.56	.83	3.09	3.32	1.28	1.56	7.83

Official Report of the Department of Agriculture, Etc.—Continued.

Counties.	Per cent. of the different breeds of sheep.						
	Grade Shropshire Downs.	Hampshire Downs.	Grade Hampshire Downs.	South Downs.	Grade South Downs.	Lincolns.	Grade Lincolns.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	..	..	..	3	27	..	..
Allen	31	..	2	..	4	..	..
Ashland	22	..	..	5	..	..	..
Ashtabula	18	..	..	10	4	..	1
Athens	14	..	..	1	6	..	..
Auglaize	60	..	..	3	4	1	2
Belmont	2	..	..	1	5	..	..
Brown	10	..	..	10	17	..	..
Butler	..	..	..	48	5	..	..
Carroll	3	..	..	2	1	..	..
Champaign	..	..	..	10	17	..	..
Clark	35	..	..	..	5	..	..
Clermont	..	..	..	..	25	..	..
Clinton	6	..	..	3	3	..	..
Columbiana	11	..	..	5	5	..	..
Coshocton	5	..	..	1	..	..	..
Crawford	19	..	..	..	1	..	..
Cuyahoga	..	..	..	4	5	..	..
Darke	7	..	..	13	7	..	..
Defiance	17	2	..	1	2	..	..
Delaware	19	..	..	3	2	..	..
Erie	22	..	..	..	..	..	..
Fairfield	7	..	..	6	1	..	..
Fayette	18	2	..	6	7	1	..
Franklin	10	..	..	8	6	..	..
Fulton	32	..	..	..	..	..	..
Gallia	12	..	..	8	4	..	..
Geauga	..	..	..	..	..	..	..
Greene	..	..	..	6	..	..	..
Guernsey	..	..	..	..	..	..	..
Hamilton	30	..	..	5	10	..	..
Hancock	20	..	..	1	4	..	2
Hardin	39	..	..	..	..	..	..
Harrison	6	..	..	..	7	..	..
Henry	50	..	..	..	..	..	..
Highland	8	1	1	13	6	..	1
Hocking	..	..	..	5	7	..	..
Holmes	19	..	..	..	..	..	..
Huron	13	1	..	1	1	..	1
Jackson	10	..	..	24	2	..	..
Jefferson	1	..	..	4	2	..	..
Knox	10	..	..	3	4	..	..
Lake	25	..	..	5	10	..	..
Lawrence	17	..	..	..	3	..	..
Licking	6	..	..	8	2	..	..
Logan	..	..	7	3	..	1	..
Lorain	17	..	..	1	1	..	..
Lucas	10	..	..	5	10	..	..
Madison	23	..	..	..	5	..	..
Mahoning	3	..	..	2	..	..	..
Marion	17	1	1	1	1	..	..
Medina	19	..	..	..	1	..	..
Meigs	13	..	..	..	..	..	..
Mercer	25	..	..	..	5	..	..
Miami	3	10	2	30	5	..	..
Monroe	..	..	..	..	..	..	..
Montgomery	15	..	..	12	..	..	..
Morgan	2	..	..	2	2	1	..
Morrow	10	..	..	2	2	..	1
Muskingum	7	2	..	5	8	..	..
Noble	1	..	..	2	27	2	2
Ottawa	..	..	..	..	5	..	..
Paulding	26	..	..	..	4	..	2
Perry	6	..	..	3	5	..	..
Pickaway	10	..	..	1	..	..	..
Pike	..	..	..	23	33	..	..
Portage	12	..	..	1	6	..	..

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Per cent. of the different breeds of sheep.						
	Grade Shropshire Downs.	Hampshire Downs.	Grade Hampshire Downs.	South Downs.	Grade South Downs.	Lincolns.	Grade Lincolns.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Preble	20	..	..	25	8	..	..
Putnam	19	1	1	3	8	..	..
Richland	8	..	..	4	3	..	..
Ross	15	..	..	..	2	..	..
Sandusky	24	..	..	1	..	3	4
Scioto	..	..	..	6	..	..	..
Seneca	14	1	9	..	3	..	..
Shelby	20	..	..	..	..	..	..
Stark	9	..	..	6	2	..	..
Summit	6	..	..	..	..	..	..
Trumbull	..	..	..	..	5	..	..
Tuscarawas	17	..	..	..	5	..	..
Union	1	..	..	1	..	..	..
Van Wert	40	..	..	3	6	..	..
Vinton	2	..	..	..	3	..	..
Warren	10	..	..	7	8	..	..
Washington	4	..	..	2	2	..	..
Wayne	15	..	..	1	4	4	..
Williams	16	1	1	1	2	..	..
Wood	6	..	..	6	..	..	1
Wyandot	15	..	..	..	..	..	..
Average per cent.	12.67	.25	.28	4.33	4.55	.16	.16

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Per cent. of the different breeds of sheep.						
	Leicesters.	Grade Leicesters.	Dorset Horned.	Grade Dorset Horned.	Other Pure Breeds.	Grades of other Pure Breeds.	Mixed Bloods.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	1	2	..	..	..	..	24
Allen	..	..	..	..	..	..	12
Ashland	5	..	..	..	..	..	30
Ashtabula	..	..	1	..	..	..	21
Athens	..	..	..	..	1	..	16
Auglaize	..	..	..	..	5	3	2
Belmont	..	1	..	..	..	1	26
Brown	..	..	..	..	..	..	7
Butler	..	..	..	..	..	2	19
Carroll	..	..	..	..	..	..	27
Champaign	..	2	2	2	..	..	35
Clark	..	..	..	..	..	..	35
Clermont	..	..	..	..	..	..	30
Clinton	..	..	1	1	1	6	11
Columbiana	..	2	..	1	..	2	22
Coshocton	..	..	..	..	..	..	22
Crawford	..	..	1	1	1	1	39
Cuyahoga	..	8	..	..	..	18	36
Darke	..	..	..	3	2	..	42
Defiance	..	..	..	..	..	3	40
Delaware	1	..	2	..	..	..	13
Erie	..	..	..	..	..	..	53
Fairfield	3	..	..	..	..	4	24
Fayette	..	5	..	..	2	..	20
Franklin	1	1	..	..	..	..	31
Fulton	..	..	..	..	..	..	35
Gallia	..	..	..	..	..	..	40
Geauga	..	..	..	..	..	..	70
Greene	..	..	1	1	..	..	20
Guernsey	..	..	..	..	..	..	9
Hamilton	..	..	..	..	..	..	5
Hancock	..	..	..	..	1	1	47
Hardin	1	1	..	..	2	..	33
Harrison	..	..	..	..	..	..	5
Henry	..	..	..	..	..	..	..
Highland	2	..	..	1	..	..	23
Hocking	..	..	..	..	..	..	16
Holmes	1	2	..	..	..	..	4
Huron	..	1	..	..	1	2	37
Jackson	..	..	..	..	..	..	22
Jefferson	..	..	2	..	..	..	10
Knox	..	..	..	..	1	..	22
Lake	..	..	..	..	..	..	..
Lawrence	..	..	..	..	..	5	29
Licking	..	..	..	..	..	4	10
Logan	..	..	..	..	..	..	9
Lorain	..	1	1	2	1	1	41
Lucas	..	..	..	..	..	..	55
Madison	..	..	..	..	..	..	20
Mahoning	..	6	..	2	..	..	10
Marion	1	1	..	..	..	..	14
Medina	..	..	1	1	..	3	26
Meigs	..	..	..	..	..	..	12
Mercer	..	..	..	..	..	..	43
Miami	..	..	..	..	..	..	25
Monroe	..	..	..	..	..	..	50
Montgomery	..	..	..	..	..	..	23
Morgan	..	..	..	..	2	3	11
Morrow	..	..	..	..	..	1	25
Muskingum	..	..	..	..	..	..	16
Noble	2	3	..	..	..	..	21
Ottawa	..	..	..	..	..	..	10
Paulding	..	..	..	..	..	..	36
Perry	..	..	..	..	..	..	5
Pickaway	..	..	..	..	..	..	32
Pike	..	..	..	..	..	..	12
Portage	..	..	..	..	..	6	47

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Per cent. of the different breeds of sheep.						
	Leicesters.	Grade Leicesters.	Dorset Horned.	Grade Dorset Horned.	Other Pure Breeds.	Grades of other Pure Breeds.	Mixed Bloods.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Preble	..	..	..	..	..	..	23
Putnam	..	..	..	..	4	..	33
Richland	..	..	..	..	..	2	18
Ross	..	..	3	..	..	..	59
Sandusky	..	..	..	..	..	..	19
Scioto	..	..	2	..	4	..	78
Seneca	..	..	..	..	..	2	22
Shelby	..	..	..	..	..	..	20
Stark	..	2	1	..	..	..	51
Summit	..	..	..	..	..	20	41
Trumbull	..	..	..	..	..	..	55
Tuscarawas	..	..	..	..	..	..	41
Union	..	..	..	..	13	5	10
Van Wert	..	..	..	1	..	..	28
Vinton	..	1	..	..	..	..	32
Warren	..	..	..	2	..	8	37
Washington	1	1	..	..	..	..	24
Wayne	..	1	..	..	..	2	33
Williams	..	..	..	..	..	13	19
Wood	..	1	..	..	..	..	27
Wyandot	..	..	..	..	..	..	..
Average per cent	.22	.49	.21	.21	.49	1.34	26.00

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	No. of townships reported.	* Number of Stallions.					
		Thoroughbreds (running horses).	Trotting Stock.	French Draft.	English Draft.	Other Pure Breeds.	Unknown Breeding.
	No.	No.	No.	No.	No.	No.	No.
Adams	6	..	2	2	..	1	2
Allen	5	..	5	6	3	4	5
Ashland	4	..	5	1	1	..	8
Ashtabula	7	..	11	1	2	2	3
Athens	4	..	1	1	..	1	6
Auglaize	4	4	9	10	3	9	13
Belmont	4	..	1	1	1	1	3
Brown	6	..	5	8	2	1	8
Butler	6	..	5	1	3	2	10
Carroll	10	..	19	12	5	5	3
Champaign	3	2	17	6	4	..	5
Clark	5	..	10	9	2	1	5
Clermont	7	..	6	8	1	1	10
Clinton	8	7	24	3	5	9	25
Columbiana	8	..	10	7	1	2	7
Coshocton	8	..	5	4	..	..	8
Crawford	9	..	13	8	6	8	20
Cuyahoga	6	2	..	..	..	3	2
Darke	7	..	12	19	10	..	27
Defiance	8	..	4	8	1	..	14
Delaware	9	2	21	17	..	2	4
Erie	7	..	3	5	1	..	6
Fairfield	7	..	13	4	8	2	13
Fayette	5	3	16	4	4	..	20
Franklin	13	..	15	16	6	11	12
Fulton	4	..	4	2	2	1	2
Gallia	6	..	4	8	2	3	1
Geauga	2	1	..	2	1	..	..
Greene	1	..	10	..	8	4	..
Guernsey	6	..	4	3	2	..	2
Hamilton	2	8	35	..	..	..	8
Hancock	4	..	..	1	2	..	1
Hardin	7	5	15	19	20	7	12
Harrison	9	..	9	8	1	2	3
Henry	2	..	..	10	7	..	2
Highland	9	1	8	5	3	2	13
Hocking	3	..	3	2	2	6	8
Holmes	4	2	2	4	1	1	1
Huron	12	3	10	4	4	3	12
Jackson	5	..	4	..	..	1	2
Jefferson	8	1	5	..	3	8	2
Knox	16	2	9	9	2	4	4
Lake	3	..	1	..	1	..	2
Lawrence	4	..	3	..	..	1	8
Licking	13	3	24	13	28	25	57
Logan	9	2	9	12	3	..	4
Lorain	15	4	16	16	9	12	38
Lucas	5	..	3	1	1	3	2
Madison	5	1	13	9	2	3	3
Mahoning	4	..	8	..	3	..	..
Marion	9	1	8	16	8	1	11
Medina	9	..	3	4	..	2	9
Meigs	4	..	3	..	1	..	4
Mercer	2	..	2	1	2	..	2
Miami	5	..	6	4	3	..	4
Monroe	1	1	..	..	1	..	..
Montgomery	2	..	2	2	..	..	..
Morgan	10	3	5	4	2	1	2
Morrow	12	..	26	25	4	1	6
Muskingum	11	1	6	5	7	1	8
Noble	7	1	1	2	..	1	9
Ottawa	3	3	..	..	..	..	1
Paulding	7	..	3	3	1	..	4
Perry	9	..	5	1	..	..	14

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	No. of townships reported.	* No. of Stallions.					
		Thoroughbreds. (running horses).	Trotting Stock.	French Draft.	English Draft.	Other Pure Breeds.	Unknown Breeding.
	No.	No.	No.	No.	No.	No.	No.
Pickaway	6	1	11	5	2	..	6
Pike	4	3	3	4	3	2	10
Portage	9	4	6	2	1	1	6
Preble	3	..	5	1	4	1	9
Putnam	9	2	3	14	6	5	14
Richland	9	..	9	7	6	..	12
Ross	9	1	1	2	4	..	14
Sandusky	7	2	8	10	5	13	6
Scioto	8	5	6	1	3	..	2
Seneca	9	1	4	9	7	4	8
Shelby	4	..	1	3	1	..	4
Stark	6	..	10	5	..	..	6
Summit	9	..	..	2	2	1	6
Trumbull	7	..	6	..	1	3	6
Tuscarawas	11	2	3	5	..	..	14
Union	4	6	8	10	1	7	..
Van Wert	4	..	4	8	8	2	9
Vinton	6	..	..	1	..	..	1
Warren	8	..	26	9	1	1	10
Washington	11	..	8	1	2	..	7
Wayne	10	..	8	8	5	1	9
Williams	2	..	3	3	2	4	1
Wood	6	3	3	1	1	1	1
Wyandot	6	..	6	9	4	1	3
Totals	582	93	643	456	269	205	634

* The number of stallions as given in the table are those reported from 582 townships of the State, and does not, therefore, represent the approximate number of each county or for the State.

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Per cent. of the different breeds of cattle.							
	Shorthorns.	Devons.	Herefords.	Polled Durhams.	Aberdeen-Angus.	Red Polls.	Galloways.	Jerseys.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	28	..	..	..	..	..	..	8
Allen	9	..	4	7	..	3	1	7
Ashland	15	..	..	3	2	..	..	6
Ashtabula	13	..	..	1	..	1	..	9
Athens	33	..	1	1	1	1	..	4
Auglaize	9	..	..	2	3	1	3	5
Belmont	21	..	2	1	2	2	..	18
Brown	21	..	..	4	2	3	..	13
Butler	27	3	1	7	1	6	..	16
Carroll	10	..	1	2	..	1	..	6
Champaign	14	2	2	3	2	..	2	18
Clark	25	..	..	..	4	2	..	7
Clermont	12	..	1	1	1	1	..	9
Clinton	26	..	1	1	2	1	..	18
Columbiana	14	..	2	..	..	1	..	19
Coshocton	20	..	..	2	3	5	..	5
Crawford	13	..	2	3	6	2	1	11
Cuyahoga	8	..	1	..	2	1	..	10
Darke	15	..	2	7	..	..	..	12
Defiance	16	..	10	1	2	1	..	7
Delaware	14	1	1	4	3	4	..	15
Erie	3	..	3	..	8	..	..	8
Fairfield	30	..	..	4	7	4	1	13
Fayette	36	..	3	..	3	..	..	9
Franklin	17	1	..	1	4	3	2	21
Fulton	6	..	3	1	..	1	1	6
Gallia	15	..	1	7	1	8	..	10
Geauga	11	2	2	..	..	..	..	12
Greene	40	..	..	..	10	5	..	25
Guernsey	16	3	6	..	1	1	..	12
Hamilton	30	..	..	..	..	..	..	30
Hancock	16	..	..	..	..	2	..	14
Hardin	22	..	6	2	1	5	1	5
Harrison	43	..	..	1	2	1	..	15
Henry	45	..	17	5	3	..	..	7
Highland	24	..	3	1	3	1	..	16
Hocking	30	2	..	..	5	5	..	13
Holmes	25	1	..	3	..	4	..	5
Huron	19	1	4	1	3	1	..	9
Jackson	38	1	1	4	..	1	..	2
Jefferson	36	..	6	..	..	..	..	17
Knox	16	..	2	3	1	2	..	13
Lake	12	3	2	..	..	3	..	13
Lawrence	8	..	1	1	..	3	..	29
Licking	23	2	1	1	2	1	1	17
Logan	16	..	..	2	..	3	..	13
Lorain	8	1	2	1	..	1	..	7
Lucas	12	..	2	2	..	1	..	13
Madison	15	..	1	..	3	..	2	7
Mahoning	25	..	..	..	..	..	..	24
Marion	26	..	3	3	2	3	1	8
Medina	10	..	..	..	..	1	..	9
Meigs	15	..	1	1	..	3	..	21
Mercer	6	..	..	..	..	..	1	6
Miami	15	2	1	7	..	8	..	16
Monroe	10	..	10	..	..	..	..	5
Montgomery	15	..	..	7	..	15	..	22
Morgan	30	3	3	2	..	..	1	13
Morrow	16	..	2	3	3	1	..	10
Muskingum	23	3	1	1	1	1	..	11
Noble	18	..	7	4	1	..	..	10
Ottawa	25	..	..	..	..	..	..	12
Paulding	17	1	1	3	1	9	..	7
Perry	15	3	..	..	2	1	..	11
Pickaway	26	..	..	2	3	2	..	9

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Per cent. of the different breeds of cattle.							
	Shorthorns.	Devons.	Herefords.	Polled Durhams.	Aberdeen-Angus.	Red Polls.	Galloways.	Jerseys.
Pike	10	3	1	2	1	2	..	13
Portage	9	..	..	..	..	..	..	11
Preble	7	..	..	1	..	1	..	5
Putnam	20	..	1	6	5	2	2	12
Richland	21	1	5	2	2	2	..	12
Ross	18	..	..	1	1	3	..	15
Sandusky	15	..	2	7	1	..	..	13
Scioto	4	..	1	5	..	6	..	21
Seneca	21	..	2	1	..	1	..	15
Shelby	5	3	..	4	4	..	..	10
Stark	16	..	1	..	..	..	..	13
Summit	14	..	3	..	..	3	..	11
Trumbull	27	..	..	..	..	..	..	13
Tuscarawas	17	..	..	1	1	4	..	10
Union	24	..	3	4	..	..	..	13
Van Wert	16	..	1	6	..	2	..	8
Vinton	13	..	..	..	..	1	..	12
Warren	16	..	..	3	3	3	..	20
Washington	12	2	1	..	1	1	..	9
Wayne	13	1	..	1	..	2	..	12
Williams	5	..	..	..	..	..	..	5
Wood	14	..	2	1	11	1	..	10
Wyandot	33	..	1	7	..	4	..	8
Average per cent.	18.35	.52	1.71	2.00	1.56	1.99	.24	11.94

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Per cent. of the different breeds of cattle.						Swine.	
	Guernseys.	Holsteins.	Polled Jerseys.	Other pure breeds.	Grades.	Natives.	Berkshires.	Poland-Chinas.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	..	1	..	5	33	25	10	58
Allen	..	2	..	..	44	23	5	20
Ashland	..	5	..	..	34	35	15	29
Ashtabula	1	5	..	..	40	30	10	16
Athens	..	1	..	1	42	15	3	47
Auglaize	..	2	..	2	49	24	8	24
Belmont	1	3	..	1	24	25	4	39
Brown	..	2	..	..	27	28	13	40
Butler	..	6	1	1	13	18	17	54
Carroll	..	2	..	..	49	29	6	37
Champaign	2	2	..	..	27	26	10	32
Clark	1	1	3	..	53	4	8	39
Clermont	..	..	..	3	48	24	5	43
Clinton	1	4	1	..	29	16	3	47
Columbiana	2	10	..	1	46	5	12	40
Coshocton	1	1	..	5	27	31	23	40
Crawford	..	6	1	10	30	15	8	23
Cuyahoga	..	12	..	..	38	28	3	8
Darke	..	6	..	1	30	27	1	28
Defiance	1	3	1	4	28	26	12	36
Delaware	..	1	1	1	45	10	9	36
Erie	..	3	..	1	25	49	9	27
Fairfield	1	5	1	4	24	6	19	48
Fayette	..	1	..	..	35	13	8	44
Franklin	1	2	..	3	29	16	14	38
Fulton	..	1	..	..	53	28	1	29
Gallia	..	2	..	..	17	39	8	33
Geauga	..	40	..	..	25	8	12	10
Greene	5	..	5	..	10	..	10	30
Guernsey	..	1	..	2	44	14	4	38
Hamilton	..	..	..	..	20	20	3	50
Hancock	..	4	..	..	37	27	5	35
Hardin	..	2	..	1	42	13	6	38
Harrison	..	3	..	..	31	4	9	67
Henry	..	3	..	..	20	..	15	68
Highland	2	4	2	7	18	19	20	26
Hocking	..	7	..	5	33	..	15	31
Holmes	..	6	3	..	19	34	20	35
Huron	..	8	..	3	25	31	4	29
Jackson	..	8	3	2	5	40	15	24
Jefferson	..	7	..	2	20	12	16	58
Knox	..	1	..	..	45	17	12	33
Lake	..	10	..	..	22	35	13	10
Lawrence	..	6	..	..	16	36	5	36
Licking	..	2	..	4	36	10	19	47
Logan	..	2	..	..	50	14	6	47
Lorain	..	10	1	1	52	16	11	14
Lucas	..	10	..	6	22	32	16	34
Madison	2	1	..	..	65	4	1	70
Mahoning	..	9	..	12	17	13	44	14
Marion	..	6	..	4	29	15	11	43
Medina	..	7	..	7	48	18	15	12
Meigs	..	1	..	..	38	20	11	35
Mercer	..	..	..	..	32	55	4	15
Miami	1	4	1	..	26	19	6	33
Monroe	..	..	..	..	..	75	..	..
Montgomery	..	8	..	..	30	8	5	27
Morgan	..	2	..	..	36	10	11	32
Morrow	..	4	..	..	44	17	4	34
Muskingum	..	3	..	..	48	8	16	53
Noble	..	1	..	1	34	24	3	53
Ottawa	..	..	..	..	20	43	25	38
Paulding	1	2	..	4	37	17	4	56
Perry	..	1	..	2	42	23	15	41
Pickaway	..	..	..	12	23	23	9	49
Pike	1	8	..	..	19	45	13	38

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Per cent. of the different breeds of cattle.						Swine.	
	Guernseys.	Holsteins.	Polled Jerseys.	Other pure breeds.	Grades.	Natives.	Berkshires.	Poland-Chinas.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Portage	..	6	..	..	60	14	9	8
Preble	..	1	..	..	57	28	2	40
Putnam	..	1	..	10	27	14	4	41
Richland	..	8	..	..	26	21	12	27
Ross	1	1	..	1	42	17	7	49
Sandusky	..	1	..	3	45	13	6	45
Scioto	..	2	..	..	16	45	21	23
Seneca	..	5	1	3	37	14	13	32
Shelby	..	13	..	..	14	47	15	47
Stark	1	9	..	1	40	19	17	21
Summit	1	5	..	..	36	26	14	20
Trumbull	3	8	..	4	43	2	37	28
Tuscarawas	..	5	..	..	41	21	11	21
Union	1	8	1	..	37	9	4	34
Van Wert	..	5	..	3	35	24	18	27
Vinton	..	1	..	..	65	8	2	39
Warren	..	2	1	..	39	13	1	44
Washington	..	..	..	1	48	25	5	42
Wayne	..	12	..	1	32	26	22	31
Williams	..	8	..	8	59	15	5	35
Wood	..	2	..	2	15	42	9	36
Wyandot	..	4	..	..	39	4	5	57
Average per cent.	.36	4.07	.32	1.77	33.78	21.39	10.42	35.24

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Continued.

Counties.	Per cent. of the different breeds of swine.							
	Chester Whites.	Duroc Jerseys.	Victorias.	Suffolks.	Yorkshires.	Essex.	Cheshire.	Mixed or unknown.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	9	..	..	..	..	..	..	22
Allen	8	15	..	1	..	..	..	51
Ashland	10	2	..	3	..	..	..	41
Ashtabula	22	..	3	2	2	..	..	45
Athens	27	1	..	1	..	..	..	21
Auglaize	6	7	..	..	..	..	..	55
Belmont	18	4	..	..	..	..	..	35
Brown	7	12	..	..	..	..	..	28
Butler	7	14	..	..	..	2	..	6
Carroll	32	..	..	..	1	..	..	24
Champaign	6	10	..	..	..	..	..	42
Clark	13	8	..	..	..	..	..	32
Clermont	9	7	..	..	..	..	..	36
Clinton	11	16	..	..	..	..	..	23
Columbiana	22	2	1	1	..	..	..	22
Coshocton	9	5	..	..	..	2	..	21
Crawford	10	9	2	1	1	1	1	44
Cuyahoga	26	..	1	..	2	..	..	60
Darke	12	15	..	..	..	..	..	44
Defiance	15	7	..	..	..	..	..	30
Delaware	18	8	..	..	3	..	1	25
Erie	21	1	..	..	..	..	..	43
Fairfield	13	10	..	..	..	..	..	10
Fayette	2	7	..	..	..	..	..	39
Franklin	13	12	..	..	1	1	1	20
Fulton	11	13	..	..	..	..	..	46
Gallia	17	..	..	..	..	..	..	42
Geauga	55	..	..	3	..	..	..	20
Greene	5	50	..	..	..	..	..	5
Guernsey	13	..	..	..	..	..	..	40
Hamilton	1	1	..	..	..	..	..	45
Hancock	7	4	..	..	1	..	..	48
Hardin	11	8	..	..	..	..	..	37
Harrison	12	2	..	..	..	..	..	10
Henry	7	5	..	..	..	..	..	5
Highland	7	10	..	2	3	2	1	29
Hocking	27	7	..	..	..	..	..	20
Holmes	22	1	..	..	..	..	..	13
Huron	19	2	..	1	1	..	..	44
Jackson	9	..	6	3	..	..	..	43
Jefferson	15	1	..	..	..	..	1	14
Knox	11	5	..	..	1	1	..	37
Lake	25	2	..	..	2	..	..	48
Lawrence	12	..	..	..	1	1	1	44
Licking	9	6	..	..	..	..	..	19
Logan	12	9	..	..	..	..	..	26
Lorain	15	4	1	1	5	..	1	48
Lucas	6	9	..	..	..	..	..	35
Madison	5	11	..	..	..	..	..	13
Mahoning	23	1	..	..	..	..	..	18
Marion	15	9	..	..	1	..	..	21
Medina	24	..	..	..	5	..	..	44
Meigs	35	1	..	..	..	..	..	18
Mercer	12	3	1	..	..	..	..	65
Miami	13	6	..	2	1	3	..	36
Monroe	50	..	..	..	..	..	..	50
Montgomery	22	20	..	..	..	..	..	26
Morgan	21	..	..	..	..	..	..	36
Morrow	21	6	..	..	1	..	..	34
Muskingum	13	1	..	..	..	..	..	17
Noble	9	2	..	..	..	..	..	33
Ottawa	27	..	..	..	..	..	..	10
Paulding	11	9	..	..	..	..	..	20
Perry	13	1	..	6	4	1	..	19
Pickaway	7	1	..	..	..	..	..	34

OFFICIAL REPORT OF THE DEPARTMENT OF AGRICULTURE, ETC.—Concluded.

Counties.	Per cent. of the different breeds of swine.							
	Chester Whites.	Duroc Jerseys.	Victorias.	Suffolks.	Yorkshires.	Essex.	Cheshire.	Mixed or unknown.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Pike	8	4	..	..	..	..	..	37
Portage	21	..	..	..	..	..	..	62
Preble	6	14	..	..	..	..	..	38
Putnam	12	18	..	..	..	..	..	25
Richland	20	4	..	..	..	1	..	34
Ross	5	19	..	..	..	2	..	18
Sandusky	8	8	..	1	2	..	5	25
Scioto	16	1	..	..	1	..	..	38
Seneca	14	9	..	..	..	..	..	32
Shelby	19	8	2	..	..	..	2	6
Stark	16	1	..	..	1	..	..	46
Summit	18	..	..	..	..	..	..	48
Trumbull	17	..	..	1	..	..	3	14
Tuscarawas	17	4	..	..	..	1	..	46
Union	6	16	..	2	12	10	1	15
Van Wert	14	10	..	..	..	..	..	81
Vinton	19	..	..	..	..	..	..	40
Warren	2	20	..	..	..	..	..	33
Washington	22	..	..	..	..	..	1	30
Wayne	18	2	..	..	..	..	..	27
Williams	12	33	..	..	..	..	..	15
Wood	3	4	..	2	9	2	2	33
Wyandot	9	10	..	..	..	..	..	19
Average per cent.	14.81	6.46	.20	.39	.71	.35	.25	31.17

OFFICIAL REPORT

OF THE

OHIO DEPARTMENT OF AGRICULTURE

ON THE

Acreage and Condition of Crops and Losses to Live Stock, May 1, 1903.

The following report represents the estimated area and condition of the crops named, as based upon the returns received from the regular township crop correspondents of the department, every county and nearly every township of the State being represented in the returns:

WHEAT—Condition compared with an average	94	per cent.
SPRING BARLEY—Acres sown compared with last year	76	“
WINTER BARLEY—Condition compared with an average	90	“
BARLEY—TOTAL AREA—		
Sown last fall	33	“
Sown this spring	67	“
RYE—Condition compared with an average	93	“
OATS—Area for 1902	1,158,940	acres
“ Area sown this year compared with 1902	89	per cent.
“ Estimated area for the harvest of 1903	1,037,811	acres
WHEAT—Damage by Hessian fly	2	per cent.
“ Damage by other insects	1	“
CLOVER—Average date of seeding	Mar. 25	
“ Acreage sown compared with last year	92	per cent.
HORSES—Losses during winter and spring	1	“
CATTLE—Losses during winter and spring	2	“
SHEEP—Losses during winter and spring	3	“
HOGS—Losses during winter and spring	3	“
BERRIES—Prospect compared with an average	82	“

While the condition of the growing wheat crop is generally good, there is a decline of two per cent. as compared with the estimated condition April first. Cold and wet weather during the month, and more especially the freezing weather the early part of the month, have undoubtedly resulted in some damage to wheat, but the figures indicate that the extent of damage does not seem to be great at this time, although further reduction in condition may become apparent as the season advances. Should the present estimate be maintained, a high average product per acre will result on an area slightly less than last year. Last year's total wheat product in Ohio was 39,462,355 bushels, according to estimates made from actual threshing throughout the State, and should no further damage be shown to the present crop, the next harvest ought to result in a product equally good, or better than last year's. The present condition of wheat shows considerably higher, as compared with a full average, than did the crop of last year at this time. The plant has attained large growth, and except where checked and discolored by frost, is strong and vigorous. The further exception is limited to a few localities in the central part of the State, and to some fields that were washed out by the high waters, but these have no great bearing on the general average for the State.

Heavy rains during the month very greatly retarded plowing. A great deal of corn ground is yet to plow. On account of not being able to plow and prepare for seeding, the area of oats, as compared with last year, will be considerably reduced. It is estimated that the shortage will amount to about 120,000 acres. The area abandoned for oats will tend to increase the area of corn and potatoes.

Winter barley and rye show fairly good condition. Pastures are good and all live stock are in average condition, having wintered well. The losses to horses and cattle during winter were very slight, and only about the usual loss to sheep and hogs. Some localities continue to report hog cholera.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ON THE AREA AND CONDITION OF CROPS AND LOSSES TO LIVE STOCK, MAY 1, 1903.

Counties.	Wheat.	Spring barley.	Winter barley.	Barley—Total area.		Rye.
	Condition compared with an average.	Area sown compared with last year.	Condition compared with an average.	Sown last fall.	Sown this spring.	Condition compared with an average.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	92	....	95	50	50	76
Allen	91	95	90	85	15	100
Ashland	94	50	98	92	8	89
Ashtabula	98	60	....	40	60	87
Athens	102	....	....	....	....	102
Auglaize	90	90	....	10	90	96
Belmont	101	100	....	....	100	97
Brown	93	....	....	....	....	90
Butler	83	....	90	44	56	100
Carroll	98	....	100	....	....	93
Champaign	100	....	....	....	....	110
Clark	98	100	....	....	100	100
Clermont	97	....	....	....	....	98
Clinton	105	90	95	50	50	101
Columbiana	97	....	....	....	....	94
Coshocton	100	90	....	10	90	92
Crawford	92	90	....	23	77	92
Cuyahoga	93	....	....	....	....	90
Darke	76	80	75	....	....	84
Defiance	88	81	....	17	83	84
Delaware	91	....	....	....	....	90
Erie	98	75	100	55	45	97
Fairfield	99	60	80	60	40	92
Fayette	110	60	....	20	80	100
Franklin	93	5	....	....	....	95
Fulton	100	100	100	....	100	94
Gallia	96	....	....	....	....	95
Geauga	105	95	100	40	60	100
Greene	98	20	80	50	50	97
Guernsey	93	10	....	....	....	97
Hamilton	98	90	95	20	80	98
Hancock	90	92	....	8	92	85
Hardin	94	58	....	....	100	100
Harrison	94	....	....	....	....	89
Henry	95	93	....	....	100	100
Highland	94	100	105	85	15	91
Hocking	96	....	....	....	....	100
Holmes	107	75	96	34	66	100
Huron	91	90	100	80	20	86
Jackson	98	....	....	....	....	98
Jefferson	94	....	....	....	....	100
Knox	102	....	....	....	....	100
Lake	90	75	....	....	100	92
Lawrence	97	73	83	63	37	100
Licking	95	....	....	....	....	88
Logan	95	100	90	75	25	98
Lorain	87	90	85	23	77	91
Lucas	100	90	....	....	100	96
Madison	93	....	....	....	....	96
Mahoning	96	....	....	....	....	89
Marion	87	....	....	....	....	95
Medina	87	....	....	....	....	89
Meigs	101	100	100	50	50	75
Mercer	85	....	....	....	....	95
Miami	88	60	65	....	....	90
Monroe	86	....	....	....	....	60
Montgomery	88	....	....	....	....	75
Morgan	102	....	....	....	....	100

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC—Continued.

Counties.	Wheat.	Spring barley.	Winter barley.	Barley—Total area.		Rye.
	Condition compared with an average.	Area sown compared with last year.	Condition compared with an average.	Sown last fall.	Sown this spring.	Condition compared with an average.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Morrow	99	....	....	....	....	98
Muskingum	91	....	....	....	....	95
Noble	98	....	....	....	....	105
Ottawa	93	100	....	....	100	100
Paulding	90	83	....	....	100	90
Perry	97	....	....	....	....	70
Pickaway	102	60	....	75	25	103
Pike	88	....	....	....	....	91
Portage	86	....	....	....	....	80
Preble	96	....	....	....	....	98
Putnam	87	78	....	14	86	87
Richland	91	....	70	63	37	67
Ross	105	....	....	....	....	99
Sandusky	88	63	60	10	90	90
Scioto	88	....	....	....	....	70
Seneca	89	......	....	....	....	94
Shelby	91	53	85	75	25	85
Stark	90	....	....	....	....	95
Summit	84	....	....	....	....	83
Trumbull	94	....	....	....	....	94
Tuscarawas	96	85	....	10	90	96
Union	93	....	....	....	....	100
Van Wert	88	93	....	8	92	98
Vinton	97	....	....	....	....	93
Warren	95	55	94	100	....	92
Washington	104	....	....	....	....	98
Wayne	97	100	....	....	100	98
Williams	97	102	....	3	97	94
Wood	95	84	95	42	58	97
Wyandot	92	110	....	....	100	100
Average per cent	94	76	90	33	67	93

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC—Continued.

Counties.	Oats.			Wheat.	
	Area for 1902.	Area sown this year compared with 1902.	Estimated area for the harvest of 1903.	Damage by Hessian fly.	Damage by other insects.
	Acres.	Per cent	Acres.	Per cent	Per cent
Adams	5,880	70	4,116	4	1
Allen	11,174	85	9,498	....	...
Ashland	17,658	86	15,185	....	...
Ashtabula	22,292	101	23,151	1	1
Athens	1,204	93	1,119	....	...
Auglaize	15,054	87	13,097	8	1
Belmont	7,971	79	6,297	1	...
Brown	10,298	72	7,415	8	2
Butler	9,305	76	7,071	5	2
Carroll	13,117	97	12,723	1	1
Champaign	15,161	88	13,342	....	...
Clark	9,033	80	7,226	5	...
Clermont	12,356	98	12,108	2	...
Clinton	7,874	83	6,535	1	1
Columbiana	19,277	98	18,891	2	...
Coshocton	9,619	88	8,464	....	...
Crawford	23,998	90	21,508	1	1
Cuyahoga	14,171	101	14,312	....	1
Darke	19,465	76	14,793	9	2
Defiance	22,531	76	17,123	1	1
Delaware	10,948	93	10,181	3	[illegible]
Erie	13,903	102	14,181	....	...
Fairfield	6,293	83	5,223	2	...
Fayette	4,388	86	3,774	....	...
Franklin	14,490	96	13,910	3	2
Fulton	27,143	91	24,700	2	1
Gallia	3,001	89	2,670	2	...
Geauga	12,099	84	10,163	2	...
Greene	6,780	80	5,424	2	...
Guernsey	6,488	102	6,617	8	...
Hamilton	3,970	70	2,779	....	...
Hancock	13,596	84	11,421	....	...
Hardin	14,110	87	12,275	....	...
Harrison	6,770	91	6,160	3	1
Henry	19,598	100	19,598	3	...
Highland	6,293	84	5,286	4	3
Hocking	3,010	85	2,559	1	...
Holmes	15,533	100	15,533	....	...
Huron	26,194	91	23,836	1	...
Jackson	1,653	94	1,553	....	...
Jefferson	10.285	87	8,947	2	...
Knox	10,786	94	10,138	1	1
Lake	7,274	93	6,764	1	...
Lawrence	3,282	63	2,068	....	...
Licking	11,478	88	10,100	3	1
Logan	13,830	83	11,478	3	1
Lorain	21,107	99	20,895	1	...
Lucas	13,236	94	12,441	2	...
Madison	19,699	92	18,123	1	...
Mahoning	14,428	100	14,428	1	2
Marion	20,175	70	14,122	3	2
Medina	22,195	103	22,860	3	2
Meigs	2,500	63	1,575	....	...
Mercer	22,680	70	15,876	5	1
Miami	16,614	82	13,624	....	1
Monroe..	7,277	88	6,404	5	2
Montgomery	11,757	93	10,934	2	1
Morgan	2,698	73	1,970	3	1
Morrow	16.734	98	16,399	1	1
Muskingum	7,854	74	5,813	3	...

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC—Continued.

Counties.	Oats.			Wheat.	
	Area for 1902.	Area sown this year compared with 1902.	Estimated area for the harvest of 1903.	Damage by Hessian fly.	Damage by other insects.
	Acres.	Per cent	Acres.	Per cent	Per cent
Noble	3,498	77	2,694	7	...
Ottawa	9,662	108	10,435	....	...
Paulding	21,223	95	20,162	....	...
Perry	2,342	88	2,061	3	...
Pickaway	2,020	86	1,737	1	...
Pike	3,431	84	2,882	....	...
Portage	19,181	100	19,181	3	...
Preble	7,929	92	7,295	10	...
Putnam	10,994	72	7,916	1	...
Richland	24,985	71	18,739	3	2
Ross	2,120	85	1,802	....	...
Sandusky	19,837	80	15,870	5	...
Scioto	4,170	67	2,794	....	...
Seneca	20,599	88	18,128	2	...
Shelby	22,820	93	21,224	6	...
Stark	30,378	90	27,340	3	1
Summit	18,688	96	17,942	4	1
Trumbull	22,068	100	22,068	....	...
Tuscarawas	17,005	98	16,665	1	1
Union	14,486	100	14,486	1	...
Van Wert	14,974	94	14,077	....	1
Vinton	1,982	90	1,784	1	...
Warren	10,661	68	7,250	3	1
Washington	7,603	70	5,222	1	1
Wayne	29,157	100	29,157	1	1
Williams	27,490	100	27,490	1	...
Wood	34,411	98	33,723	1	2
Wyandot	13,639	80	10,911	1	...
Average per cent	....	89	....	2	1
Totals	1,158,940	....	1,037,811	....	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC—Continued.

Counties.	Clover.		Horses	Cattle.	Sheep	Hogs.	Berries
	Average date of seeding. Days after Feb. 15.	Acreage sown compared with last year.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Prospect compared with an average.
	Days.	Per ct	Per ct	Per ct	Per ct	Per ct	Per ct
Adams	35	83	1	2	3	2	54
Allen	36	93	1	1	2	3	95
Ashland	39	93	...	1	2	1	98
Ashtabula	44	87	2	2	3	1	87
Athens	36	101	...	1	2	1	85
Auglaize	42	78	4	2	6	3	71
Belmont	40	86	1	1	4	1	73
Brown	32	93	1	1	2	1	91
Butler	38	97	1	1	2	5	78
Carroll	43	88	2	2	3	1	81
Champaign	50	95	1	1	4	2	100
Clark	50	100	...	...	...	...	80
Clermont	40	90	1	1	1	1	83
Clinton	36	94	1	1	2	3	72
Columbiana	44	95	1	1	2	1	88
Coshocton	38	91	2	2	2	3	91
Crawford	45	95	2	1	3	3	97
Cuyahoga	40	90	4	4	2	6	88
Darke	41	93	3	2	4	3	76
Defiance	39	88	3	2	3	5	74
Delaware	48	90	1	2	5	3	68
Erie	42	99	...	1	4	1	92
Fairfield	35	95	2	2	3	3	74
Fayette	41	101	2	1	3	5	74
Franklin	44	93	1	1	4	9	90
Fulton	53	94	1	...	2	2	90
Gallia	30	90	1	1	3	1	70
Geauga	47	95	1	1	2	1	100
Greene	32	100	3	2	4	2	88
Guernsey	35	86	2	1	4	1	96
Hamilton	35	100	3	3	...	2	70
Hancock	48	92	2	1	3	6	63
Hardin	47	95	5	5	12	7	98
Harrison	40	96	2	2	4	1	72
Henry	50	95	3	2	3	3	93
Highland	34	94	2	2	4	5	77
Hocking	25	103	2	2	4	4	75
Holmes	41	100	1	1	2	1	93
Huron	36	84	1	1	4	4	91
Jackson	42	78	1	1	6	3	59
Jefferson	44	90	2	2	3	1	61
Knox	37	100	2	1	3	1	97
Lake	40	82	3	1	3	2	75
Lawrence	43	85	1	1	2	6	58
Licking	38	90	3	3	5	3	82
Logan	41	98	2	1	3	2	76
Lorain	38	92	2	2	5	1	92
Lucas	42	88	2	2	2	2	92
Madison	46	83	1	1	1	2	91
Mahoning	43	97	3	1	3	2	81
Marion	42	84	5	5	8	5	73
Medina	45	86	1	1	3	1	90
Meigs	28	95	1	...	2	...	74
Mercer	40	100	1	1	2	3	85
Miami	38	92	1	2	2	2	77
Monroe	40	98	1	1	3	1	90
Montgomery	45	100	...	...	3	4	95
Morgan	31	90	1	1	3	2	87
Morrow	42	98	1	1	3	1	56
Muskingum	36	87	3	2	5	1	88

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE, ETC—Concluded.

Counties.	Clover.		Horses	Cattle	Sheep	Hogs.	Berries
	Average date of seeding. Days after Feb. 15.	Acreage sown compared with last year.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Losses during winter and spring.	Prospect compared with an average.
	Days.	Per ct	Per ct	Per ct	Per ct	Per ct	Per ct
Noble	32	92	1	1	4	1	92
Ottawa	44	93	...	...	...	1	100
Paulding	51	92	...	2	1	3	82
Perry	46	85	...	3	5	2	94
Pickaway	38	103	4	4	6	11	95
Pike	34	89	1	1	3	5	66
Portage	45	91	2	2	3	3	70
Preble	36	100	2	1	1	1	80
Putnam	47	93	2	1	4	9	90
Richland	43	87	4	4	9	7	75
Ross	40	89	3	1	3	2	70
Sandusky	45	86	...	...	...	3	81
Scioto	36	87	...	...	2	...	63
Seneca	42	90	2	...	2	3	75
Shelby	40	100	1	1	1	4	90
Stark	43	90	3	1	3	4	80
Summit	43	94	1	1	1	...	67
Trumbull	46	96	1	2	3	2	93
Tuscarawas	32	97	2	2	3	2	90
Union	40	90	1	...	2	1	82
Van Wert	48	95	1	...	2	3	65
Vinton	41	71	...	...	1	1	80
Warren	37	93	2	2	3	4	83
Washington	33	93	...	...	2	1	65
Wayne	42	95	1	1	2	1	85
Williams	41	100	2	2	4	2	88
Wood	43	91	1	1	1	1	80
Wyandot	38	90	1	1	2	2	83
Average per cent	Mch. 25	92	1	2	3	3	82

OFFICIAL REPORT

OF THE

OHIO DEPARTMENT OF AGRICULTURE

ON THE

Area and Condition of Wheat, Corn and Potatoes and the Condition of other Crops, July 1, 1903.

The following report presents the area of wheat, corn and potatoes as compared with the areas of last year. Condition is by comparison with a full average condition. The estimates have been carefully worked out from the returns received from the regular township crop correspondents of the Department:

WHEAT—Estimated area for the harvest	2,073,010	acres
WHEAT—Condition compared with an average	84	per cent.
BARLEY—Condition compared with an average	81	per cent.
RYE—Condition compared with an average	87	per cent.
OATS—Condition compared with an average	82	per cent.
CORN—Area in 1902	3,171,810	acres
CORN—Area this year compared with 1902	92.38	per cent.
CORN—Total estimated area for 1903	2,930,044	acres
CORN—Condition compared with an average	74	per cent.
CORN—Damage by cut worm	3	per cent.
CORN—Damage by white grub	2	per cent.
CLOVER—Damage by white grub	2	per cent.
POTATOES—Area in 1902	114,574	acres
POTATOES—Area planted this year compared with 1902.	97	per cent.
POTATOES—Estimated area for 1903	110,847	acres
POTATOES—Condition compared with an average	89	per cent.
TOBACCO—Acreage compared with last year	84	per cent.
TIMOTHY—Condition compared with an average	79	per cent.
PASTURES—Condition compared with an average	95	per cent.
HORSES—Condition compared with an average	95	per cent.
COLTS—Number compared with an average	90	per cent.
CATTLE—Condition compared with an average	97	per cent.
CALVES—Number compared with an average	94	per cent.
WOOL—Clip compared with last year	92	per cent.

In Southern Ohio the wheat is about all cut, and throughout the State the work of harvesting is in active progress. The area seeded last fall was estimated at 2,082,846 acres. Of this area only about nine thousand acres was estimated to have been plowed up this spring, some on account of being winter killed but mostly by being flooded out, thus leaving for the harvest, the area as noted in this report, 2,073,010 acres.

It has been evident for the past two months that the wheat prospect was gradually declining, though not to any great extent. May 1st the estimated wheat condition was 94 per cent. of an average. On June 1st it showed 89 per cent., and on July 1st, as the crop is being harvested, the estimate is 84 per cent. Some few correspondents report the wheat heads not well filled, and others that the berry is shrunken, but the most evident cause of decline in the condition of wheat, is the damage that accrued from rust which was prevalent, more particularly in central, southern and southwestern counties of the State. There is a great amount of good and excellent wheat, and the general estimate of 84 per cent. for the State is not very bad, considering that there is practically no loss of area. There will be some heavy yields in bushels per acre, and on the whole will probably average fairly well.

Oats were very late in being seeded, and the area is some short of last year. The crop is not uniform over the State. In some sections it is good and even excellent, while in other sections the condition is low. There are a few reports of damage by red rust. It is thought the outcome in bushels per acre will average well for the State, and that the quality of grain will be good.

Unfavorable conditions made corn planting unusually late. Many fields intended for corn were not planted, which, with other causes, has resulted in a reduction of area, as compared with last year, of 241,766 acres, according to the closest estimate that can be made at this time. The area last year was 3,171,810 acres.

A great amount of the corn is yet small, but color and stand are good, and with favorable growing weather and absence of destructive insects, the crop will now go rapidly forward. A great deal of corn that was planted in good season shows large, fine growth and has the making of heavy product per acre. Irregularity of corn growth, owing entirely to the wide difference in times of planting, is very noticeable all over the State, but it is also apparent that the plant, of whatever growth, very generally shows healthy condition at this time, although many fields have not yet been worked. The low condition reported by correspondents is on account of small growth. Indications point to rapid improvement.

Mowing meadows improved some during the month, but the crop generally is light, and in many sections the quality of timothy hay will be poor, owing to the great amount of white top with which the fields are infected. Clean fields of timothy are the exception.

Pastures have continued to improve and are now nearly up to an average condition.

The estimated area of potatoes is 110,847 acres. This is very nearly up to the area of last year. The crop is in fair condition, showing 89 per cent. of a full average.

REPORT ON THE AREA AND CONDITION OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1903.

Counties.	WHEAT.				Barley.	Rye.	Oats.
	Condition Compared with an Average.	Area Sown Last Fall.	Plowed up this Spring.	Estimated Area for the Harvest.	Condition Compared with an Average.	Condition Compared with an Average.	Condition Compared with an Average.
	Per ct.	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.
Adams	77	18,257	..	18,257	..	60	65
Allen	80	25,914	..	25,914	90	87	87
Ashland	91	23,353	..	23,353	85	84	85
Ashtabula	86	8,310	1	8,227	72	89	95
Athens	92	12,367	..	12,367	..	95	95
Auglaize	64	32,135	..	32,135	67	80	78
Belmont	98	18,996	..	18,996	..	93	86
Brown	70	19,340	2	18,953	..	92	72
Butler	74	51.399	2	50.371	91	96	84
Carroll	93	13,061	..	13,061	..	98	93
Champaign	90	28,624	..	28,624	70	95	93
Clark	80	31,621	..	31,621	85	96	82
Clermont	70	11,442	1	11,328	70	86	76
Clinton	85	32,987	..	32,987	80	89	77
Columbiana	90	52,465	..	52,465	..	95	98
Coshocton	80	22,028	1	21,808	..	76	83
Crawford	84	20,697	1	20,490	75	78	91
Cuyahoga	86	8,266	1	8,183	..	85	91
Darke	72	62,303	1	61,680	..	82	78
Defiance	89	15,944	2	15,625	71	83	75
Delaware	97	8,644	1	8,558	..	96	83
Erie	87	12,932	..	12,932	85	95	89
Fairfield	79	35,864	..	35,864	80	86	77
Fayette	79	41,854	1	41,435	75	91	88
Franklin	85	30,746	..	30,746	..	84	87
Fulton	88	11,947	..	11,947	71	87	76
Gallia	88	12,777	..	12,777	80	92	72
Geauga	98	6,257	..	6,257	88	94	97
Greene	80	43,205	2	42,341	80	83	80
Guernsey	90	13,480	..	13,480	..	92	88
Hamilton	85	15,766	..	15,766	..	85	80
Hancock	81	37,814	1	37,436	70	85	80
Hardin	82	25,389	1	25,135	88	85	85
Harrison	97	10,807	..	10,807	..	75	90
Henry	88	19,448	..	19,448	67	90	73
Highland	70	32.559	1	32,233	78	78	70
Hocking	80	10,487	..	10,487	..	87	90
Holmes	98	20,653	..	20,653	98	99	100
Huron	78	24,353	..	24,353	50	78	86
Jackson	76	7,690	..	7,690	..	80	82
Jefferson	93	10,783	..	10,783	..	80	92
Knox	93	23,543	..	23,543	80	87	86
Lake	84	3,562	..	3,562	90	98	90
Lawrence	80	6,695	2	6,561	95	83	49
Licking	91	23,642	..	23,642	..	88	83
Logan	84	28,040	2	27,479	73	69	83
Lorain	85	17,982	..	17,982	85	77	87
Lucas	83	8,423	1	8,339	65	86	78
Madison	75	16,593	..	16,593	..	93	92
Mahoning	94	14,427	..	14,427	..	93	95
Marion	84	13,557	..	13,557	..	95	73
Medina	82	19,911	..	19,911	..	91	92
Meigs	89	11,592	..	11,592	85	76	75
Mercer	75	37,257	..	37,257	..	80	70
Miami	81	41,661	1	41,244	90	90	84
Monroe	90	14,985	..	14,985	..	100	110
Montgomery	82	41,225	..	41,225	85	93	78
Morgan	93	9,702	..	9,702	..	86	83
Morrow	96	12,000	..	12,000	..	99	85
Muskingum	83	20,311	..	20,311	..	84	77

REPORT ON THE AREA AND CONDITION OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1903—Continued.

Counties.	WHEAT.				Barley.	Rye.	Oats.
	Condition Compared with an Average.	Area Sown Last Fall.	Plowed up this Spring.	Estimated Area for the Harvest.	Condition Compared with an Average.	Condition Compared with an Average.	Condition Compared with an Average.
	Per ct.	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.
Noble	92	11,856	..	11,856	..	92	84
Ottawa	88	13,269	2	13,004	87	90	75
Paulding	90	13,568	..	13,568	53	90	72
Perry	80	11,822	..	11,322	..	83	92
Pickaway	79	58,752	..	58,752	..	85	85
Pike	70	12,192	..	12,192	..	77	77
Portage	89	17,411	..	17,411	..	83	85
Preble	75	51,191	1	50,679	88	92	83
Putnam	76	34,629	..	34,629	57	86	63
Richland	90	29,767	..	29,767	82	77	73
Ross	70	41,397	1	40,983	70	85	76
Sandusky	80	31,412	..	31,412	80	100	74
Scioto	70	15,624	1	15.468	85	76	66
Seneca	79	47,153	..	47,153	75	89	79
Shelby	70	37,426	..	37,426	82	62	74
Stark	91	41,953	..	41,053	..	97	84
Summit	88	21,402	..	21,402	90	92	83
Trumbull	92	10,568	1	10,462	..	93	87
Tuscarawas	99	23,768	..	23,768	100	91	88
Union	89	15,661	1	15,504	98	100	92
Van Wert	73	20,983	2	20,563	63	89	71
Vinton	82	5,509	..	5,509	..	88	89
Warren	70	55,043	..	55,043	90	88	77
Washington	72	21,137	..	21,137	..	80	86
Wayne	92	42,992	..	42,992	85	89	86
Williams	97	14,994	..	14,994	98	100	65
Wood	90	48,092	2	47,130	92	98	95
Wyandot	89	25,703	1	25,446	100	95	77
Average	84	....	....	....	81	87	82
Totals	....	2,082,846	....	2,073,010	....	....	....

REPORT ON THE AREA AND CONDITION OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1903—Continued.

Counties.	CORN.						Clover.
	Area in 1902.	Area this year compared with 1902.	Total Estimated Area for 1903.	Condition Compared with an Average.	Damage by Cut Worm.	Damage by White Grub.	Damage by White Grub.
	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	39,043	89	34,748	78	3	5	..
Allen	34,616	97	33,578	82	3	..	..
Ashland	47,239	93	43,933	76	3	6	2
Ashtabula	13,385	95	12,706	73	2	1	2
Athens	11,669	97	11,319	87	1	2	..
Auglaize	46,303	84	38,895	64	5	3	1
Belmont	21,371	95	20,302	77	..	3	1
Brown	48,446	97	46,993	73	2	2	3
Butler	56,828	93	52,850	65	2	1	..
Carroll	13,633	93	12,679	73	3	5	2
Champaign	60,283	105	63,297	65	2	2	..
Clark	51,345	85	43,643	59	2	..	..
Clermont	38,679	94	36,358	67	1	1	2
Clinton	63,559	96	61,017	78	3	7	1
Columbiana	17,078	98	16,736	88	2	2	2
Coshocton	24,288	93	22,588	74	11	3	4
Crawford	39,132	90	35,219	86	1	2	8
Cuyahoga	10,225	93	9,509	73	1	..	1
Darke	86,046	80	68,837	71	5	4	3
Defiance	32,513	80	26,010	60	3	1	3
Delaware	38,269	94	35,973	76	2	1	..
Erie	18,139	90	17,958	68	6	1	1
Fairfield	50,294	94	47,276	78	4	1	1
Fayette	63,628	99	62,992	76	..	4	..
Franklin	68,050	98	66,689	73	3	2	3
Fulton	36,833	94	34,623	64	2	..	..
Gallia	19,347	88	17,025	81	1	10	..
Geauga	9,462	99	9,367	83	1	..	..
Greene	61,668	83	51,184	68	5	10	5
Guernsey	18,621	98	18,249	75	5	2	3
Hamilton	19,764	88	17,392	70	3	3	5
Hancock	56,595	91	51,501	69	2	..	1
Hardin	48,080	92	44,234	74	3	1	1
Harrison	12,191	96	11,703	77	2	3	1
Henry	61,327	97	59,487	77	2	..	..
Highland	58,702	93	54,593	72	6	7	6
Hocking	13,926	95	13,230	75	5	..	..
Holmes	23,112	96	22,188	80	2	2	3
Huron	33,312	90	29,981	65	4	2	..
Jackson	15,231	92	14,013	71	5	4	3
Jefferson	11,939	93	11,103	81	4	2	3
Knox	33,038	95	31,386	82	4	3	4
Lake	6,485	94	6,096	80	1	..	..
Lawrence	18,043	71	12,811	67	5	9	3
Licking	51,077	97	49,545	83	4	2	2
Logan	50,533	93	46,996	78	2	1	1
Lorain	20,268	94	19,052	74	1	5	1
Lucas	23,870	98	23,393	61	1	..	..
Madison	81,324	94	76,445	74	1	..	2
Mahoning	13,612	98	13,340	79	3	1	2
Marion	43,749	75	32,812	68	3	1	1
Medina	22,512	95	21,386	79	2	..	..
Meigs	14,093	88	12,402	74	1	3	4
Mercer	47,402	100	47,402	60	2	..	..
Miami	51,457	95	48,834	80	1	2	4
Monroe	18,199	100	18,199	90	2	1	5
Montgomery	47,156	95	44,798	82	3	2	2

REPORT ON THE AREA AND CONDITION OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1903—Continued.

Counties.	CORN.						Clover.
	Area in 1902.	Area this year compared with 1902.	Total Estimated Area for 1903.	Condition Compared with an Average.	Damage by Cut Worm.	Damage by White Grub.	Damage by White Grub.
	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.	Per ct.
Morgan	14,648	93	13,623	73	3	2	2
Morrow	28,025	98	27,465	98	1	2	1
Muskingum	29,051	97	28,179	84	4	1	1
Noble	16,065	86	13,816	67	1	3	2
Ottawa	22,468	91	20,446	69	1	..	4
Paulding	54,730	86	47,068	72	2	..	..
Perry	17,229	96	16,540	82	10	2	1
Pickaway	75,726	97	73,454	84	2	3	1
Pike	27,975	95	26,576	67	2	2	2
Portage	14,924	98	14,626	68	2	2	2
Preble	54,870	97	53,224	76	1	1	1
Putnam	64,367	84	54,068	64	2	..	2
Richland	32,750	93	30,458	74	1	2	6
Ross	62,025	96	59,744	69	2	2	2
Sandusky	44,095	90	39,686	60	1	..	1
Scioto	22,667	87	19,720	79	3	2	5
Seneca	49,829	86	42.853	68	2	3	2
Shelby	49,078	95	46,624	64	3	2	2
Stark	30,535	100	30,535	76	3	4	2
Summit	17,741	98	17,386	73	1	1	1
Trumbull	14,841	77	11,428	78	5	1	2
Tuscarawas	20,628	92	18,978	73	2	3	2
Union	51,162	94	48,092	80	1	1	2
Van Wert	48,863	95	46,420	67	5	1	2
Vinton	10,538	95	10,011	84	1	1	1
Warren	49,413	91	44,966	61	1	3	1
Washington	20,787	89	18,500	78	2	2	1
Wayne	39,185	93	36,442	72	1	7	5
Williams	32,413	98	31,765	77	..	..	..
Wood	79,471	84	66,756	64	2	3	4
Wyandot	38,702	87	33,671	77	2	..	1
Average	....	92.38	....	74	3	2	2
Totals	3,171,810	....	2,930,044	....	....	....	....

REPORT ON THE AREA AND CONDITION OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1903—Continued.

Counties.	POTATOES.				Tobacco.	Timothy.
	Area in 1902.	Area Planted this Year Compared with 1902.	Estimated Area for 1903.	Condition Compared with an Average.	Acreage Compared with Last Year.	Condition Compared with an Average.
	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.
Adams	261	93	243	87	97	82
Allen	574	100	574	83	..	90
Ashland	5,051	96	4,849	94	..	83
Ashtabula	3,993	92	3,674	88	63	74
Athens	392	97	380	91	..	85
Auglaize	1,046	80	837	90	..	86
Belmont	739	94	695	95	100	78
Brown	416	100	416	97	103	93
Butler	867	90	780	86	95	75
Carroll	406	84	341	83	..	63
Champaign	459	85	390	93	..	80
Clark	590	95	561	90	100	83
Clermont	1,061	73	775	74	82	80
Clinton	838	96	324	88	90	84
Columbiana	1,603	99	1,587	97	..	74
Coshocton	937	86	856	90	..	64
Crawford	1,202	94	1,130	93	..	87
Cuyahoga	7,090	98	6,948	85	..	76
Darke	1,373	80	1,098	76	85	73
Defiance	886	80	6,469	71	65	80
Delaware	545	98	534	97	..	76
Erie	3,895	104	4,090	89	..	68
Fairfield	764	94	718	92	..	78
Fayette	29	98	28	95	..	75
Franklin	1,456	96	1,398	95	..	80
Fulton	1,055	100	1,055	102	..	78
Gallia	133	98	130	71	60	63
Geauga	2,846	89	2,533	95	..	70
Greene	4,246	85	3,609	80	90	88
Guernsey	394	100	394	91	78	81
Hamilton	3,044	85	292	65	..	83
Hancock	1,143	100	1,143	96	..	85
Hardin	1,375	93	1,279	79	..	89
Harrison	275	99	272	89	..	75
Henry	753	95	715	93	..	83
Highland	302	93	281	83	62	79
Hocking	450	100	450	100	..	75
Holmes	644	98	631	103	..	95
Huron	1,496	100	1,496	95	..	91
Jackson	136	90	122	80	100	68
Jefferson	617	96	592	95	..	72
Knox	287	93	267	93	..	80
Lake	1,890	91	1,720	100	..	85
Lawrence	260	99	257	89	63	44
Licking	1,148	89	1,022	90	..	82
Logan	494	100	494	92	..	82
Lorain	2,368	98	2,321	95	..	77
Lucas	3,296	98	3,230	94	..	68
Madison	129	100	129	100	..	86
Mahoning	1,915	96	1,838	99	..	67
Marion	767	82	629	80	..	86
Medina	2,211	104	2,299	94	..	87
Meigs	468	94	440	87	95	83
Mercer	802	90	722	80	..	50
Miami	833	92	766	98	90	86
Monroe	1,322	90	1,190	90	100	110

REPORT ON THE AREA AND CONDITION OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1903—Continued.

Counties.	POTATOES.				Tobacco.	Timothy.
	Area in 1902.	Area Planted this Year Compared with 1902.	Estimated Area for 1903.	Condition Compared with an Average.	Acreage Compared with Last Year.	Condition Compared with an Average.
	Acres.	Per ct.	Acres.	Per ct.	Per ct.	Per ct.
Montgomery	1,015	88	893	80	86	85
Morgan	392	93	365	96	62	73
Morrow	881	98	873	91	..	82
Muskingum	698	92	642	88	..	76
Noble	575	86	495	84	96	81
Ottawa	712	94	669	88	..	77
Paulding	366	93	340	86	..	90
Perry	480	97	466	92	..	72
Pickaway	291	96	279	96	..	85
Pike	430	93	340	82	90	63
Portage	7,010	99	6,940	93	..	73
Preble	427	98	419	94	95	92
Putnam	1,023	86	106	78	100	78
Richland	1,769	99	1,751	99	..	83
Ross	476	89	427	84	75	83
Sandusky	2,149	91	1,956	79	..	84
Scioto	887	87	772	81	..	63
Seneca	1,379	86	1,166	81	..	78
Shelby	730	89	650	82	80	83
Stark	2,890	100	2,890	80	..	68
Summit	2,857	99	2,828	87	..	68
Trumbull	3,304	101	3,337	95	..	79
Tuscarawas	1,658	96	1,612	91	..	68
Union	186	95	177	94	..	92
Van Wert	911	99	902	88	..	83
Vinton	220	94	207	99	..	80
Warren	348	99	345	59	88	76
Washington	1,561	95	1,483	91	..	72
Wayne	2,850	91	2,594	85	88	81
Williams	1,439	97	1,396	93	..	90
Wood	1,076	97	1,044	96	..	86
Wyandot	512	93	470	93	..	89
Average	....	97	....	89	84	79
Totals	114,574	....	110,847	....	....	....

REPORT ON THE AREA AND CONDITION OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1903—Continued.

Counties.	Pastures.	Horses.	Colts.	Cattle	Calves.	Wool.
	Condition Compared with an Average.	Condition Compared with an Average.	Number Compared with an Average.	Condition Compared with an Average.	Number Compared with an Average.	Clip Compared with Last Year.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Adams	90	97	100	100	93	95
Allen	102	100	100	100	98	97
Ashland	85	94	87	95	89	88
Ashtabula	92	95	90	96	95	92
Athens	103	99	98	99	98	96
Auglaize	100	88	71	96	76	85
Belmont	96	98	77	95	96	96
Brown	97	93	80	97	98	93
Butler	104	95	88	100	93	104
Carroll	71	90	88	89	89	91
Champaign	112	93	88	93	93	93
Clark	100	95	77	100	100	98
Clermont	96	98	88	100	100	91
Clinton	98	99	92	100	91	95
Columbiana	96	99	99	101	100	99
Coshocton	82	96	92	95	97	93
Crawford	98	93	87	99	96	97
Cuyahoga	95	99	99	99	95	98
Darke	86	88	73	84	70	92
Defiance	98	93	84	91	85	84
Delaware	97	84	92	98	98	91
Erie	97	99	84	99	93	89
Fairfield	85	93	78	92	94	75
Fayette	98	95	90	98	93	95
Franklin	98	95	86	98	96	98
Fulton	94	96	97	96	96	96
Gallia	86	93	84	88	85	88
Geauga	95	96	84	99	85	88
Greene	100	90	95	95	90	100
Guernsey	98	101	100	101	98	96
Hamilton	100	100	88	100	100	100
Hancock	101	98	99	98	95	98
Hardin	104	97	95	99	99	99
Harrison	90	98	99	99	96	96
Henry	97	98	102	100	99	98
Highland	93	93	88	94	86	87
Hocking	100	100	100	100	100	80
Holmes	99	100	101	99	99	94
Huron	97	94	99	98	96	90
Jackson	88	91	76	81	83	88
Jefferson	92	93	93	96	94	89
Knox	96	97	99	97	96	101
Lake	98	98	93	97	100	100
Lawrence	66	91	89	91	96	71
Licking	86	92	94	96	96	83
Logan	94	91	100	94	94	90
Lorain	98	97	96	98	91	89
Lucas	90	91	92	98	88	100
Madison	105	97	95	100	96	89
Mahoning	100	98	99	94	96	91
Marion	95	88	86	95	90	92
Medina	94	98	96	98	91	87
Meigs	100	99	102	99	96	96
Mercer	100	95	105	100	90	100
Miami	92	98	93	95	94	95
Monroe	100	100	100	100	100	80
Montgomery	93	92	90	97	95	90
Morgan	97	97	99	100	94	100
Morrow	100	100	98	100	96	94

REPORT ON THE AREA AND CONDITION OF WHEAT, CORN, POTATOES AND OTHER CROPS, JULY 1, 1903—Concluded.

Counties.	Pastures.	Horses.	Colts.	Cattle	Calves.	Wool.
	Condition Compared with an Average.	Condition Compared with an Average.	Number Compared with an Average.	Condition Compared with an Average.	Number Compared with an Average.	Clip Compared with Last Year.
	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.	Per ct.
Muskingum	97	94	92	96	92	98
Noble	100	97	86	97	95	89
Ottawa	95	95	92	100	97	100
Paulding	97	98	97	97	100	101
Perry	94	97	76	98	94	89
Pickaway	98	98	95	97	95	101
Pike	97	90	87	92	91	83
Portage	91	95	73	98	94	82
Preble	102	100	105	100	100	92
Putnam	94	88	83	92	93	89
Richland	92	97	95	97	97	98
Ross	96	91	83	96	91	85
Sandusky	89	92	99	95	95	96
Scioto	87	88	79	93	88	80
Seneca	78	85	77	93	82	90
Shelby	97	96	85	98	97	82
Stark	74	89	63	100	83	74
Summit	91	95	86	94	95	88
Trumbull	88	99	98	99	95	88
Tuscarawas	85	95	99	93	93	95
Union	99	96	97	99	97	98
Van Wert	96	93	93	91	95	91
Vinton	101	99	85	99	99	94
Warren	99	93	91	100	95	91
Washington	96	98	93	99	96	92
Wayne	92	99	79	95	91	89
Williams	98	82	100	90	100	100
Wood	95	81	68	97	88	94
Wyandot	101	92	91	99	98	92
Totals	95	95	90	97	94	92

OFFICIAL REPORT

OF THE

Ohio Department of Agriculture

On the Acreage and Product of Wheat, Oats, Barley and Rye, and the Condition of Other Crops, October 1, 1903.

The following report represents area as returned by the township assessors of the state, and bushels as figured from actual threshing done throughout the several townships and reported to the department by the regular corps of crop correspondents. The basis for estimating the average product per acre and the total bushels for the crops named is the most reliable to be secured and the results indicated are regarded as approximately correct:

WHEAT—Area sown last fall as returned by township assessors	2,037,905 acres
" Product per acre estimated from threshers' returns	14.4 bushels
" Total estimated product for 1903	29,297,408 bushels
" Quality compared with an average	88 per cent.
" Crop of 1902 still in producers' hands	7 per cent.
OATS—Area as returned by township assessors	1,232,633 acres
" Product per acre estimated from threshers' returns	30 bushels
" Total estimated product for 1903	36,561,230 bushels
" Quality compared with an average	81 per cent.
BARLEY—Area of winter and spring, as returned by township assessors	44,574 acres
" Product per acre estimated from threshers' returns	23 bushels
" Total estimated product for 1903	1,018,857 bushels
" Quality compared with an average	84 per cent.
RYE—Area as returned by township assessors	54,648 acres
" Product per acre as estimated from threshers' returns	14 bushels
" Total estimated product for 1903	774,347 bushels
" Quality compared with an average	88 per cent.
CORN—Prospect compared with an average	65 per cent.
" Cut up for fodder	77 per cent.
" Average date for cutting for fodder	September 18.
POTATOES—Probable total yield compared with an average	70 per cent.
TOBACCO—Condition compared with an average	83 per cent.
PASTURES—Condition compared with an average	69 per cent.
APPLES—Prospect compared with an average	48 per cent.

The area of wheat does not vary greatly from that harvested in 1902, but the average product per acre is three and four-tenth bushels less than last year, and the total product seven and one-half millions bushels less.

As indicated by the reports of the department preceding the wheat harvest, the crop kept declining until it became quite evident that it could not recover sufficient to make a full average. A decline of 14 per cent. occurred between May 1 and August 1. The greatest wheat shortage is in the central, southern and southwestern counties, it being the good yields of the northern and eastern counties that has pulled the crop up to nearly thirty million bushels. A fair product for the state should reach forty million bushels. Considering that the product in many counties is less than twelve bushels per acre, the total result is better than many expected.

Oats show no great difference in area as compared with last year, but there are about ten million bushels less in total product, and nearly ten bushels less in average product per acre. Last year the oats crop was abnormally large and while there seems a vast difference between that product and the yield for 1903, the yield for this year is only about ten per cent. short of a full average per acre. The crop in many localities was affected by rust. The grain is light in weight, being estimated at 81 per cent. of good average quality.

According to the returns of township assessors, the area of rye was about 25 per cent. less than the area harvested last year. This particular crop, more than any other grain crop in Ohio, varies greatly from year to year. This year's rye crop is estimated to have produced about three bushels less per acre than was produced per acre last year, and the total product is much less than last year by reason of the great reduction in area.

The area of barley is not quite equal to the area of last year and the product per acre shows about the same comparative reduction as other grain crops. Quality is not up to a full average.

Corn, except that planted very late and on poor ground, has matured fairly well and a great amount is in the shock. Many fields are late and the corn is still green, but as yet there has been no serious injury by frost and the present prospects for maturing are good, although there will be a great deal of chaffy and unmerchantable corn that must be consumed on the farm. While in some localities and on favored fields there are good and even excellent corn crops, there is so much that falls short that the general prospect is pulled down to 65 per cent. of an average.

While there are varied reports concerning the potato crop, many correspondents report good yield and good quality; while others report light crop and affected by rot. It is evident that the crop will not produce a fair average for the state.

Apples will result in less than one-half of an average crop. The fruit is falling from the trees. The best results are shown where orchards have been given proper attention and proper methods of spraying have been resorted to.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF WHEAT, OATS AND BARLEY, AND THE CONDITION OF OHIO CROPS, OCTOBER 1, 1903.

Counties.	Wheat.					Oats.				Barley.			
	Area sown last fall as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated products for 1903.	Quality compared with an average.	Crop of 1902 still in producers' hands.	Area as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1903.	Quality compared with an average.	Area of winter and spring as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1903.	Quality compared with an average.
	acres.	bushels.	bushels.	per ct.	per ct.	acres.	bushels.	bushels.	per ct.	bushels.	bushels.	bushels.	per ct.
Adams	20,076	12.3	246,935	80	....	4,899	21.7	106,091	72	....	....	....	....
Allen	23,105	14.5	335,022	98	1	9,741	30.0	292,230	90	320	30.0	9,600	....
Ashland	28,642	21.2	607,210	95	4	18,638	29.0	540,502	80	93	42.5	3,953	88
Ashtabula	7,956	17.9	142,412	93	5	23,510	34.1	801,691	92	67	15.0	1,005	80
Athens	8,184	11.5	94,116	90	10	1,329	15.5	26,000	81	17	12.0	204	....
Auglaize	33,740	12.2	411,628	80	4	14,902	30.7	55,137	81	52	28.0	1,456	95
Belmont	19,653	16.0	314,448	87	13	8,525	31.7	270,243	82	26	18.0	468	....
Brown	20,877	7.7	160,753	75	12	9,344	15.0	140,160	77	50	10.0	500	....
Butler	54,086	13.3	719,344	89	8	9,091	25.7	233,639	83	1,525	31.7	48,343	87
Carroll	12,861	16.3	209,634	85	14	14,354	25.8	370,413	78	....	....	....	....
Champaign	36,862	16.0	589,792	88	10	18,458	30.0	553,740	95	31	17.0	527	....
Clark	32,713	16.8	549,588	79	6	9,958	28.2	280,816	83	55	30.0	1,650	100
Clermont	12,797	8.7	111,334	75	5	11,779	18.0	212,122	78	14	10.0	140	....
Clinton	36,555	12.7	464,248	85	12	5,646	26.7	150,748	83	46	15.0	690	....
Columbiana	18,661	19.0	354,559	100	8	16,258	32.0	520,256	96	8	30.0	240	100
Coshocton	22,480	15.2	341,696	83	7	10,076	28.0	282,128	71	18	18.0	324	....
Crawford	23,192	19.0	440,648	96	7	24,920	29.0	722,680	88	82	30.0	2,460	60
Cuyahoga	7,724	17.2	132,853	99	4	16,125	37.0	596,625	85	125	20.0	2,500	....
Darke	65,551	11.7	766,947	89	7	20,279	32.9	667,179	87	116	16.0	1,856	....
Defiance	11,539	16.2	186,932	89	3	24,334	28.6	695,952	73	3,093	24.0	74,232	68
Delaware	11,473	14.4	176,211	90	3	13,503	28.8	388,886	87	55	4.0	220	100
Erie	13,495	18.7	252,356	88	1	14,143	35.5	502,077	79	338	22.0	7,436	....
Fairfield	42,387	14.6	618,850	74	4	5,682	23.6	134,095	79	66	4.0	264	80
Fayette	36,433	12.5	455,412	76	8	4,709	28.7	135,148	83	24	11.0	264	100
Franklin	33,927	11.7	396,946	83	7	15,563	30.2	470,002	82	28	15.0	420	....
Fulton	10,400	18.5	192,400	100	2	26,413	30.0	792,390	85	1,501	25.0	37,525	100
Gallia	11,676	12.3	143,615	81	13	3,661	19.8	72,488	74	....	....	....	....

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF WHEAT, OATS AND BARLEY, AND THE CONDITION OF OHIO CROPS, OCTOBER 1, 1903—Concluded.

Counties.	Wheat.					Oats.				Barley.			
	Area sown last fall as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated products for 1903.	Quality compared with an average.	Crop of 1902 still in producers' hands.	Area as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1903.	Quality compared with an average.	Area of winter and spring as returned by township assessors.	Product per acre estimated from threshers' returns.	Total estimated product for 1903.	Quality compared with an average.
	acres.	bushels.	bushels.	per ct.	per ct.	acres.	bushels.	bushels.	per ct.	bushels.	bushels.	bushels.	per ct.
Geauga	6,172	17.0	104,924	95	3	13,496	27.5	371,140	85	19	20.0	380	....
Greene	44,759	12.0	537,108	80	5	5,666	20.0	113,320	60	112	20.0	2,240	75
Guernsey	13,496	13.2	178,147	85	14	6,330	22.0	139,260	74	13	16.0	208	....
Hamilton	17,295	13.4	231,753	88	10	3,945	25.0	98,625	85	234	30.0	7,020	88
Hancock	42,470	15.2	645,544	90	3	13,518	35.6	481,241	85	482	16.0	7,712	100
Hardin	23,015	14.5	333,717	89	10	13,255	28.2	373,791	87	147	30.0	4,410	80
Harrison	10,840	14.5	157,180	97	12	6,368	22.8	145,190	80	....	....	....	....
Henry	19,868	16.5	327,822	80	1	22,843	30.0	685,290	45	4,825	17.5	84,438	53
Highland	38,174	8.6	328,296	62	9	5,363	26.0	139,438	66	41	10.0	410	....
Hocking	11,340	13.0	147,420	93	10	2,840	26.5	75,260	90	5	15.0	75	....
Holmes	24,284	18.7	454,111	100	3	18,128	32.7	592,786	84	28	22.0	616	....
Huron	26,283	20.5	538,801	96	10	28,579	30.4	868,801	81	108	20.0	2,160	88
Jackson	6,934	9.0	62,436	82	10	1,767	17.5	30,923	85	....	....	....	....
Jefferson	12,037	15.0	180,555	92	7	10,566	27.7	292,678	83	20	20.0	400	....
Knox	24,022	14.4	345,916	91	14	10,459	30.8	322,137	89	29	18.0	522	....
Lake	3,294	18.0	59,292	80	....	6,280	40.0	251,200	75	58	20.0	1,160	....
Lawrence	3,458	9.7	33,543	75	1	4,754	19.0	90,326	75	8	18.5	148	88
Licking	29,308	13.7	401,519	81	22	12,792	26.6	340,267	81	....	....	....	....
Logan	27,109	13.7	371,393	91	13	19,348	30.3	586,244	76	103	25.0	2,575	99
Lorain	18,048	19.8	357,350	90	20	22,269	31.8	708,154	83	68	25.0	1,700	....
Lucas	6,718	21.3	143,093	95	4	14,459	34.7	501,727	92	596	30.7	18,297	88
Madison	12,829	10.5	134,704	90	5	26,278	30.0	788,340	87	159	12.0	1,908	....
Mahoning	13,076	22.0	287,672	93	4	15,857	33.7	534,381	81	9	24.0	216	....
Marion	16,174	12.5	202,175	94	13	20,832	26.5	552,048	86	15	25.0	375	100
Medina	20,192	18.2	365,494	99	5	22,997	37.8	869,286	96	53	25.0	1,325	....
Meigs	12,463	10.5	130,861	85	5	2,603	15.0	39,045	83	11	12.0	132	....
Mercer	30,921	12.0	371,052	80	5	22,324	32.0	714,368	75	782	15.0	11,730	....

Miami	44,136	11.0	485,496	90	4	18,348	30.5	559,614	78	....	....	....	....
Monroe	17,971	13.0	233,623	75	21	8,159	18.3	149,310	73	9	16.0	144	....
Montgomery	42,704	12.7	542,341	83	4	10,335	20.0	206,700	77	50	30.0	1,500	60
Morgan	10,659	16.0	170,544	88	13	3,067	26.3	80,662	70	....	....	....	75
Morrow	15,208	17.4	264,619	87	1	17,106	27.2	465,283	88	6	20.0	120	....
Muskingum	22,362	13.2	295,178	91	5	6,911	24.2	166,246	89	39	18.0	702	....
Noble	12,805	13.2	169,026	91	6	3,714	22.7	84,308	73	6	15.0	90	....
Ottawa	9,043	15.0	135,645	90	....	12,678	30.0	380,340	73	2,798	20.0	55,960	75
Paulding	10,839	15.0	162,585	99	6	28,281	26.5	749,447	82	9,575	19.5	186,713	82
Perry	14,331	16.0	235,296	98	5	2,421	28.3	68,514	97	17	17.0	289	....
Pickaway	59,124	10.6	626,714	81	11	2,442	28.9	70,563	91	....	....	....	....
Pike	11,929	6.8	81,117	57	16	4,166	20.6	85,820	74	2	10.0	20	....
Portage	17,799	20.7	368,439	97	6	20,163	36.3	732,917	87	37	24.0	888	....
Preble	47,861	10.0	478,610	95	....	8,675	27.5	230,563	93	67	15.0	1,005	....
Putnam	33,163	14.3	474,231	94	9	11,330	32.2	364,826	69	2,658	23.8	63,260	80
Richland	30,981	21.7	672,288	95	7	24,946	35.7	890,572	65	131	25.0	3,275	75
Ross	42,394	9.4	400,503	74	12	2,569	29.4	75,529	85	28	35.0	980	60
Sandusky	33,175	16.2	537,435	89	1	23,094	37.0	854,478	79	332	24.0	7,968	90
Scioto	13,009	8.8	114,479	54	2	3,675	18.4	67,620	69	....	....	....	....
Seneca	45,122	15.5	699,391	91	4	24,809	30.4	754,193	83	207	21.0	4,347	85
Shelby	37,249	10.3	383,664	91	2	25,424	24.0	610,176	89	20	20.0	400	94
Stark	42,762	18.5	791,097	95	1	31,506	29.0	913,674	91	52	22.0	1,144	....
Summit	21,776	20.2	439,875	93	3	19,169	34.6	663,247	91	27	23.0	621	....
Trumbull	10,363	18.0	186,534	99	9	20,987	34.8	730,348	88	11	21.0	231	....
Tuscarawas	23,982	15.4	369,323	89	11	18,592	24.8	461,082	82	....	....	....	....
Union	14,777	12.7	187,668	90	1	15,460	26.5	409,690	89	57	16.0	912	80
Van Wert	20,907	15.5	324,058	100	14	16,515	33.7	556,556	88	6,457	24.5	158,197	90
Vinton	5,679	10.0	56,790	87	3	1,971	22.5	44,347	80	....	....	....	....
Warren	29,386	12.4	364,386	88	8	10,856	21.0	227,976	68	342	14.0	4,788	....
Washington	22,035	10.0	220,350	71	2	8,456	19.0	160,664	74	2	12.0	24	....
Wayne	43,111	22.0	948,442	100	3	32,982	34.2	1,127,974	87	45	25.0	1,125	....
Williams	14,231	20.0	284,620	100	1	26,763	30.0	802,890	75	2,118	35.0	74,130	100
Wood	21,458	20.0	429,160	93	6	40,581	37.6	1,525,845	85	3,826	27.0	103,302	75
Wyandot	23,948	13.2	316,114	97	3	16,646	34.6	575,952	87	18	16.0	288	85
Totals	2,037,905		29,297,408			1,232,633		36,561,230		44,574		1,018,867	
Per cent		14.4		88	7		30.0		81		23.0		84

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF RYE AND THE CONDITION OF OHIO CROPS, OCTOBER 1, 1908.

Counties.	Rye.				Corn.			Potatoes	Tobacco	Pastures	Apples.
	Area as returned by township assessors.	Product per acre, estimated from threshers' returns.	Total estimated product for 1908.	Quality compared with an average.	Prospect compared with an average.	Cut up for fodder.	Date of cutting for fodder, days after Sept. 1st.	Probable total yield compared with an average.	Condition compared with an average.	Condition compared with an average.	Prospect compared with an average.
	Acres.	Bushels.	Bushels.	Per cent.	Per cent.	Per cent.		Per cent.	Per cent.	Per cent.	Per cent.
Adams	949	10.0	9,490	80	50	96	22	57	77	62	35
Allen	255	13.0	3,315	95	73	90	18	70	....	73	45
Ashland	575	20.0	11,500	90	59	54	25	73	....	71	46
Ashtabula	808	16.0	13,928	91	63	41	23	70	....	100	28
Athens	59	11.0	649	88	50	83	15	79	....	70	33
Auglaize	395	15.0	5,925	....	76	90	5	65	....	61	35
Belmont	244	21.7	5,296	85	40	99	10	80	80	33	33
Brown	3,590	8.3	29,797	85	47	68	23	52	83	43	50
Butler	319	11.3	3,605	92	65	48	13	68	100	75	38
Carroll	132	12.7	1,676	86	59	75	23	70	....	66	43
Champaign	1,054	16.0	16,864	90	68	98	7	68	75	75	55
Clark	548	11.0	6,028	78	50	86	14	56	80	23	32
Clermont	2,214	10.7	23,690	88	43	46	10	53	85	65	42
Clinton	813	10.0	8,130	100	41	84	15	46	100	44	45
Columbiana	262	19.7	5,161	99	74	69	24	84	....	93	56
Coshocton	423	19.0	8,037	75	50	98	18	69	....	34	81
Crawford	207	18.0	3,726	75	77	94	19	81	....	82	66
Cuyahoga	567	14.5	8,221	98	74	43	27	86	....	93	68
Darke	372	19.0	7,068	95	78	63	17	56	85	83	67
Defiance	222	17.7	3,929	90	72	83	23	74	....	95	58
Delaware	1,118	12.8	14,310	95	73	95	13	77	....	73	68
Erie	282	14.0	3,948	95	76	39	23	70	....	95	44
Fairfield	615	10.7	6,581	75	66	94	14	75	....	26	46
Fayette	327	12.0	3,924	90	60	98	19	74	....	63	61
Franklin	1,189	12.3	14,624	90	67	90	14	97	....	53	87

Fulton	1,345	14.5	19,503	95	90	41	20	75	...	100	63
Gallia	652	14.5	9,454	75	50	89	19	61	80	49	13
Geauga	216	17.0	3,672	90	70	...	...	68	...	105	60
Greene	433	12.0	5,196	80	50	90	15	60	75	20	75
Guernsey	442	10.0	4,420	75	52	96	18	81	...	41	22
Hamilton	574	12.0	6,888	100	75	25	15	60	...	85	90
Hancock	485	13.0	6,305	83	82	93	13	82	...	98	59
Hardin	926	20.0	18,520	83	79	84	22	57	...	79	61
Harrison	64	10.0	640	85	57	95	22	75	...	56	49
Henry	3,002	20.0	60,040	60	85	60	25	70	...	90	55
Highland	884	9.0	7,956	68	56	95	13	54	83	55	54
Hocking	302	21.0	6,342	100	68	95	18	78	...	58	58
Holmes	633	14.5	9,179	98	62	93	33	82	...	65	51
Huron	96	15.0	1,140	78	70	78	23	84	...	99	63
Jackson	281	12.0	3,372	95	52	98	18	80	...	30	21
Jefferson	103	13.0	1,339	75	65	81	22	80	...	66	52
Knox	930	13.0	12,090	75	69	96	18	77	...	55	88
Lake	582	18.0	10,476	...	20	...	...	10	...	90	50
Lawrence	118	16.3	1,923	87	36	89	20	65	85	41	10
Licking	2,498	12.5	31,225	91	67	98	11	73	...	47	50
Logan	1,187	13.0	15,431	83	71	88	18	58	...	60	71
Lorain	192	15.0	2,880	...	73	5	24	80	...	101	45
Lucas	884	18.0	15,912	90	81	78	18	66	...	98	75
Madison	1,303	6.0	7,818	95	55	83	15	77	...	75	78
Mahoning	106	14.0	1,484	100	83	43	28	71	...	98	51
Marion	1,357	16.0	21,712	...	76	79	21	73	...	92	54
Medina	833	18.0	14,994	100	77	100	28	89	...	98	98
Meigs	380	6.0	2,280	...	45	100	15	58	...	53	...
Mercer	272	17.0	4,624	...	85	95	25	35	...	70	25
Miami	78	9.0	702	83	63	60	23	60	88	60	30
Monroe	444	13.5	5,994	70	63	98	18	80	70	67	12
Montgomery	228	10.0	2,280	90	62	90	12	50	75	43	45
Morgan	238	13.5	3,213	83	54	99	14	84	75	58	15
Morrow	799	12.0	9,588	95	79	100	20	70	...	75	57
Muskingum	1,173	14.5	17,008	98	53	86	13	72	85	46	20
Noble	205	11.0	2,255	90	54	98	14	90	80	39	17
Ottawa	216	16.0	3,456	80	87	25	20	72	...	100	78
Paulding	652	15.5	10,106	98	83	63	20	82	...	87	82
Perry	369	15.5	5,720	100	72	100	12	60	...	63	30
Pickaway	508	13.7	6,959	88	66	98	10	70	...	41	66
Pike	464	9.5	4,408	68	55	87	13	64	...	31	85
Portage	576	14.2	8,179	86	69	48	25	69	...	101	47
Preble	120	15.0	1,800	...	83	40	23	83	88	60	75
Putnam	965	18.6	17,949	81	70	87	18	61	...	74	43
Richland	633	20.0	12,660	75	77	98	23	72	...	93	55
Ross	759	19.7	14,952	73	48	85	11	66	75	49	33
Sandusky	424	22.7	9,625	80	71	91	21	74	...	86	69
Scioto	144	15.0	2,160	75	55	87	20	68	80	42	9
Seneca	146	17.0	2,482	...	84	98	24	79	...	92	60
Shelby	232	13.3	3,086	90	48	36	23	48	82	64	89
Stark	296	16.5	4,884	100	68	52	22	78	100	86	88
Summit	297	16.5	4,900	98	76	6	27	73	...	88	73
Trumbull	253	13.0	3,289	98	74	88	25	79	...	99	83
Tuscarawas	375	28.0	10,500	88	62	91	18	73	...	66	64

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF RYE AND THE CONDITION OF OHIO CROPS, OCTOBER 1, 1903—Concluded.

Counties.	Rye.				Corn.			Potatoes	Tobacco	Pastures	Apples.
	Area as returned by township assessors.	Product per acre, estimated from threshers' returns.	Total estimated product for 1903.	Quality compared with an average.	Prospect compared with an average.	Cut up for fodder.	Date of cutting for fodder, days after Sept. 1st.	Probable total yield compared with an average.	Condition compared with an average.	Condition compared with an average.	Prospect compared with an average.
	Acres.	Bushels.	Bushels.	Per cent.	Per cent.	Per cent.		Per cent.	Per cent.	Per cent.	Per cent.
Union	1,217	14.0	17,038	93	70	74	13	79	....	78	71
Van Wert	765	16.0	12,245	100	64	68	20	40	....	48	45
Vinton	242	9.7	2,347	82	56	99	16	70	....	39	17
Warren	915	10.0	9,150	80	38	72	15	44	77	54	68
Washington	238	18.0	4,284	90	51	99	14	100	75	62	15
Wayne	564	14.0	7,896	95	76	57	22	79	....	83	51
Williams	325	15.0	4,875	100	90	25	20	85	....	....	33
Wood	705	25.0	17,625	90	83	36	23	77	....	100	59
Wyandot	254	17.7	4,496	98	82	95	19	73	....	89	52
Totals	54,648		774,347				av. date Sept. 18				
Per cent		14.0		88	65	77		70	83	69	48

OFFICIAL REPORT

OF THE

Ohio Department of Agriculture

On the Acreage of Fall Crops, Acreage and Product of Potatoes, and the Condition of Other Crops

November 1, 1903.

The following report is compiled from the returns received from the regular township crop correspondents of the department. The area of fall crops is estimated by comparison with the area seeded last year, as returned by township assessors. The area of potatoes is the estimate returned by the assessors, the bushels being computed by the average produced per acre as reported by the department correspondents:

WHEAT—Area sown last fall as returned by township assessors	2,037,905 acres
" Sown this fall compared with last year	93 per cent.
" Estimated area seeded for the harvest of 1904	1,903,057 acres
" Condition compared with an average	81 per cent.
" Average date of seeding	September 29.
WINTER BARLEY—Area sown last fall as returned by township assessors	3,236 acres
" Sown this fall compared with last year	94 per cent.
" Estimated area for the harvest of 1904	3,053 acres
" Condition compared with an average	83 per cent.
RYE—Area sown last fall as returned by township assessors	54,648 acres
" Sown this fall as compared with last year	87 per cent.
" Estimated area seeded for the harvest of 1904	47,802 acres
" Condition compared with an average	85 per cent.
CORN—Prospects compared with an average	69 per cent.
BUCKWHEAT—Prospects compared with an average	78 per cent.
CLOVER SEED—Prospects compared with an average	64 per cent
POTATOES—Area planted as estimated by township assessors	111,390 acres
" Average product per acre	82 bushels
" Total estimated product for 1903	9,135,464 bushels
" Affected by rot	4 per cent.
APPLES—Products compared with an average	48 per cent.
HOGS—Condition compared with an average	92 per cent.
" Number to be fattened compared with last year	87 per cent.
COMMERCIAL FERTILIZERS—Farmers using on wheat	53 per cent.

Wheat seeding was late, owing to unfavorable condition of the soil, it being too dry at the proper seeding season. Many fields intended for wheat were abandoned and the result is a shortage of about 7 per cent. in total area for the state as compared with last year; there is, however, in some of the northwest counties, where the area was low last year, a comparative increase.

Generally over the state, the continued lack of moisture interfered with the germination and growth of wheat. In many fields there is yet little or no appearance of the plant and, except in a few favored localities, none has attained the strength and growth that should have been acquired under more favorable weather conditions. In the few favored localities there are fields that show fine, full growth. Some fly is reported, but no great amount of injury is indicated at this time. Rain is very greatly needed not only for the growth of fall crops, but for a general supply of water for farm purposes.

The open season has given ample time for the maturing of corn, much of which was very late. The corn crop is light as compared with the heavy crop of last year, and will fall below even an average crop for the state. The crop was shocked in fairly good condition, but husking is almost at a standstill, owing to the dry condition of the fodder and also the scarcity of farm hands. Very little cribbing has been done. The first killing frosts occurred October 23rd and 25th, but corn, except a little very late, was matured so no damage resulted.

The potato product for this year, on nearly the same area as last year, shows 1,372,358 bushels less than were produced last year. The average product per acre for this year is estimated at 82 bushels, while last year the product averaged 90 bushels per acre. The season has not been altogether favorable to the growth of potatoes; there has not been sufficient moisture at the proper time, hence there are many small potatoes. In some localities the production has been a good average and the quality fine, but generally for the state the crop is as indicated, and there are many reports of its being affected by rot.

There is a tendency to sell hogs off very close, especially in counties and localities where cholera prevails and there is fear of its spread. Hog cholera is reported from several counties, but it is not so general as in past years, due perhaps to more restrictive and better quarantine measures and to stricter attention to sanitary conditions.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE OF FALL CROPS, ACREAGE AND PRODUCT OF POTATOES AND THE CONDITION OF OTHER CROPS, NOVEMBER 1, 1903.

Counties.	Wheat.				
	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1904.	Condition as compared with an average.	When sown days after September 15.
	acres.	per ct.	acres.	per ct.	
Adams	20,076	88	17,667	64	27
Allen	23,107	100	23,107	100	11
Ashland	28,642	88	25,107	100	11
Ashtabula	7,956	85	6,763	93	7
Athens	8,184	94	7,693	77	18
Auglaize	33,740	85	28,679	68	11
Belmont	19,653	88	17,295	44	20
Brown	20,877	87	18,163	70	23
Butler	54,086	90	48,677	80	16
Carroll	12,861	85	10,932	71	7
Champaign	36,862	85	31,333	67	12
Clark	32,713	85	27,806	79	19
Clermont	12,797	88	11,261	74	26
Clinton	36,555	88	32,168	81	17
Columbiana	18,661	101	18,848	93	7
Coshocton	22,480	85	19,108	42	11
Crawford	23,192	97	22,496	92	8
Cuyahoga	7,724	95	7,338	97	12
Darke	65,551	87	57,029	84	17
Defiance	11,539	93	10,731	98	6
Delaware	11,473	94	10,785	91	10
Erie	13,495	98	13,225	101	10
Fairfield	42,387	85	36,029	67	20
Fayette	36,433	90	32,790	80	12
Franklin	33,927	93	31,552	70	18
Fulton	10,400	90	9,360	97	8
Gallia	11,676	85	9,925	80	30
Geauga	6,172	90	5,555	101	2
Greene	44,759	100	44,759	60	16
Guernsey	13,496	86	11,607	74	18
Hamilton	17,295	90	15,566	90	5
Hancock	42,470	112	47,566	90	13
Hardin	23,015	94	21,634	95	8
Harrison	10,840	92	9,973	65	16
Henry	19,868	105	20,861	100	10
Highland	38,174	89	33,975	79	16
Hocking	11,340	85	9,639	70	20
Holmes	24,284	95	25,070	85	9
Huron	26,283	106	27,860	99	9
Jackson	6,934	90	6,241	87	25
Jefferson	12,037	97	11,676	80	7
Knox	24,022	85	20,419	71	9
Lake	3,294	85	2,800	80	6
Lawrence	3,458	85	2,939	70	24
Licking	29,308	87	25,498	71	15
Logan	27,109	93	25,211	84	9
Lorain	18,048	98	17,687	89	9
Lucas	6,718	100	6,718	101	5
Madison	12,829	105	13,470	95	17
Mahoning	13,076	100	13,076	100	8
Marion	16,174	105	16,983	92	11
Medina	20,192	102	20,596	98	8
Meigs	12,403	87	10,843	77	23
Mercer	30,921	100	30,921	92	16
Miami	44,136	91	40,164	75	18
Monroe	17,971	85	15,275	65	15
Montgomery	42,704	90	38,434	65	23
Morgan	10,659	85	9,060	60	25
Morrow	15,208	102	15,512	93	8
Muskingum	22,362	85	19,008	58	21
Noble	12,805	88	11,268	71	26
Ottawa	9,043	120	10,852	100	7

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE OF FALL CROPS, ACREAGE AND PRODUCT OF POTATOES AND THE CONDITION OF OTHER CROPS, NOVEMBER 1, 1903—Continued.

Counties.	Wheat.				
	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1904.	Condition as compared with an average.	When sown days after September 15.
	acres.	per ct.	acres.	per ct.	
Paulding	10,839	125	13,549	91	5
Perry	14,331	94	13,471	65	19
Pickaway	59,124	100	59,124	67	21
Pike	11,929	85	10,140	65	21
Portage	17,799	94	16,731	90	11
Preble	47,861	101	48,340	68	22
Putnam	33,163	98	32,500	79	16
Richland	30,981	90	27,883	88	6
Ross	42,394	101	42,818	75	23
Sandusky	33,175	92	30,521	92	11
Scioto	13,009	85	11,058	65	33
Seneca	45,122	98	44,220	92	8
Shelby	37,249	99	36,877	88	14
Stark	42,762	91	38,913	90	2
Summit	21,776	90	19,598	81	4
Trumbull	10,363	100	10,363	95	4
Tuscarawas	23,982	96	23,023	68	9
Union	14,777	87	12,856	72	17
Van Wert	20,907	93	19,444	92	15
Vinton	5,679	85	4,827	49	24
Warren	29,386	85	24,978	65	25
Washington	22,035	85	18,730	73	27
Wayne	43,111	99	42,680	98	8
Williams	14,231	100	14,231	93	5
Wood	21,458	98	21,029	95	10
Wyandot	23,948	93	22,272	88	7
Averages		93		81	Sept. 29.
Totals	2,037,905		1,903,057		

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE OF FALL CROPS, ACREAGE AND PRODUCT OF POTATOES AND THE CONDITION OF OTHER CROPS, NOVEMBER 1, 1903—Continued.

Counties.	Winter Barley.				Rye.			
	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1904.	Condition as compared with an average.	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1904.	Condition as compared with an average.
	acres.	per ct.	acres.	per ct.	acres.	per ct.	acres.	per ct.
Adams				60	949	72	684	75
Allen	8	100	8	100	255	95	242	100
Ashland	72	50	36	80	575	80	460	80
Ashtabula	3	100	3	95	808	81	654	92
Athens	17	100	17	80	59	75	44	63
Auglaize	20	10	2	50	395	75	296	90
Belmont	4	100	4	50	244	95	232	88
Brown					3,590	102	3,662	70
Butler	1,369	93	1,273	90	319	100	319	89
Carroll					132	72	95	77
Champaign	5	100	5	70	1,054	100	1,054	70
Clark	25	100	25	81	548	80	438	71
Clermont					2,214	91	2,015	76
Clinton					813	78	634	76
Columbiana					262	93	244	95
Coshocton	1	100	1	45	423	70	296	84
Crawford	16	100	16	93	207	75	155	85
Cuyahoga	5	100	5	98	567	95	539	95
Darke	30	100	30	85	372	98	365	93
Defiance	46	100	46	99	222	86	191	95
Delaware					1,118	84	939	92
Erie	60	100	60	100	282	95	264	100
Fairfield	61	100	61	70	615	80	492	85
Fayette	12	100	12	81	327	70	229	80
Franklin	15	100	15	73	1,189	77	916	87
Fulton	23	100	23	98	1,345	87	1,170	90
Gallia					652	90	587	97
Geauga					216	80	173	100
Greene	17	60	10	70	433	90	390	90
Guernsey					442	80	354	75
Hamilton	234	100	234	93	574	100	574	100
Hancock					485	100	485	95
Hardin	58	100	58	97	926	82	762	94
Harrison					64	90	58	85
Henry	86	100	86	100	3,002	100	3,002	100
Highland	28	90	25	90	884	54	477	73
Hocking	5	100	5	73	302	100	302	80
Holmes					633	97	614	93
Huron					96	63	60	100
Jackson					281	100	281	87
Jefferson					103	83	85	85
Knox	27	100	27	74	930	87	809	67
Lake	15	100	15	82	582	100	582	100
Lawrence	8	55	4	60	118	72	85	75
Licking					2,498	73	1,824	77
Logan	2	75	2	90	1,187	89	1,056	91
Lorain	16	100	16	91	192	80	154	91
Lucas	12	100	12	100	884	100	884	75
Madison	20	100	20	97	1,393	105	1,463	100
Mahoning					166	100	166	95
Marion	13	100	13	95	1,357	100	1,357	100
Medina	10	100	10	99	833	95	791	92
Meigs	6	100	6	79	320	70	266	90
Mercer	74	100	74	95	272	88	239	90
Miami					78	89	69	68
Monroe					444	70	309	75
Montgomery	32	80	26	70	228	87	198	75
Morgan					238	63	150	58
Morrow	3	100	3	95	799	85	679	97
Muskingum	28	100	28	62	1,173	72	845	66
Noble	2	100	2	75	205	70	144	73
Ottawa	27	100	27	100	216	100	216	100

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE OF FALL CROPS. ACREAGE AND PRODUCT OF POTATOES AND THE CONDITION OF OTHER CROPS, NOVEMBER 1, 1903—Concluded.

Counties.	Winter Barley.				Rye.			
	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1904.	Condition as compared with an average.	Area sown last fall as returned by township assessors.	Sown this fall compared with last year.	Estimated area seeded for the harvest of 1904.	Condition as compared with an average.
	acres.	per ct.	acres.	per ct.	acres.	per ct.	acres.	per ct.
Paulding	54	100	54	93	652	75	489	95
Perry	3	100	3	68	369	68	251	78
Pickaway	....	....	....	....	568	98	557	85
Pike	2	100	2	69	464	63	292	65
Portage	6	100	6	92	576	92	530	96
Preble	39	100	39	72	120	100	120	90
Putnam	54	100	54	81	965	92	888	91
Richland	62	100	62	90	633	75	475	95
Ross	18	100	62	90	759	79	700	77
Sandusky	12	100	12	95	424	100	424	100
Scioto	....	....	....	....	144	100	144	86
Seneca	18	100	18	95	146	100	146	97
Shelby	6	100	6	65	232	89	206	90
Stark	9	100	9	93	296	90	266	95
Summit	....	....	....	....	297	77	229	75
Trumbull	....	....	....	....	253	95	240	100
Tuscarawas	....	....	....	....	375	77	289	82
Union	24	100	24	75	1,217	88	1,071	70
Van Wert	13	47	6	75	765	76	581	92
Vinton	....	....	....	....	242	75	182	60
Warren	316	100	316	100	915	83	729	68
Washington	....	....	....	....	238	92	219	89
Wayne	....	....	....	....	564	90	508	100
Williams	30	100	30	95	325	95	309	87
Wood	39	90	34	90	705	80	564	98
Wyandot	16	91	15	95	254	96	244	98
Averages		94		83		87		85
Totals	3,236		3,053		54,648		47,802	

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE OF FALL CROPS, ACREAGE AND PRODUCT OF POTATOES AND THE CONDITION OF OTHER CROPS.

Counties.	Corn.	Buck-wheat.	Clover Seed.	Potatoes.				Apples.	Hogs.		Commercial Fertilizer.
	Prospect compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Area planted as estimated by township assessors.	Average product per acre.	Total estimated product for 1903.	Affected by rot.	Product compared with an average.	Condition compared with an average.	Number to be fattened compared with 1902.	Farmers using on wheat.
	per cent	per cent	per cent	acres	bushels	bushels	per cent	per cent	per cent	per cent	per cent
Adams	61	80	66	305	50	15,250	6	41	83	74	87
Allen	73		88	635	48	30,480		30	100	95	3
Ashland	65	70	66	967	114	110,238	1	52	94	87	65
Ashtabula	72	86	79	3,263	68	221,884	15	32	95	92	78
Athens	57	85	73	309	115	35,535		31	99	76	77
Auglaize	65	65	43	1,208	75	90,225	3	43	83	53	4
Belmont	52		41	785	101	79,285	2	18	88	74	48
Brown	70	90	100	404	35	14,140	2	45	93	95	68
Butler	72	75	77	950	88	83.600	4	33	83	89	1
Carroll	61	92	42	410	87	35,670	4	62	81	92	86
Champaign	70	75	69	392	65	25,480	4	81	80	67	57
Clark	49	80	74	684	78	53,332	5	42	92	84	19
Clermont	55		56	990	47	46,530	1	40	93	83	43
Clinton	45		87	353	39	13,767		69	88	85	63
Columbiana	73	100	68	1,603	94	150,682	3	44	93	94	72
Coshocton	48	58	35	921	84	77,364	3	36	86	71	55
Crawford	69		91	1,384	90	124,560	1	59	94	78	67
Cuyahoga	79		90	6.446	70	451,220	8	82	99	98	9
Darke	78		69	1,336	75	100,200		78	94	94	12
Defiance	79	78	59	841	110	16,820	3	50	86	75	1
Delaware	67		66	571	102	58,242	6	59	94	95	46
Erie	77	92	87	3.120	96	299,520	12	62	99	85	42
Fairfield	80		56	1,019	67	68,273	9	52	92	87	61
Fayette	57		73	32	70	2,240	2	65	90	83	90
Franklin	72	60	77	1,559	92	143,428	7	83	98	80	42
Fulton	100	100	10	988	125	123,500	10	80	90	85	2

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE OF FALL CROPS, ACREAGE AND PRODUCT OF POTATOES AND THE CONDITION OF OTHER CROPS—Concluded.

Counties.	Corn.	Buck-wheat.	Clover Seed.	Potatoes.				Apples.	Hogs.		Commercial Fertilizer.
	Prospect compared with an average.	Prospect compared with an average.	Prospect compared with an average.	Area planted as estimated by township assessors.	Average product per acre.	Total estimated product for 1903.	Affected by rot.	Product compared with an average.	Condition compared with an average.	Number to be fattened compared with 1902.	Farmers using on wheat.
	per cent	per cent	per cent	acres	bushels	bushels	per cent	per cent	per cent	per cent	per cent
Gallia	62	....	55	201	92	18,492	6	9	88	80	80
Geauga	71	90	90	2,620	76	199,120	12	52	95	95	75
Greene	50	....	60	671	50	33,550	....	60	90	90	75
Guernsey	53	83	43	488	69	33,672	4	26	96	79	85
Hamilton	90	....	....	3,199	40	127,960	....	60	100	80	80
Hancock	83	95	52	965	83	80,095	2	73	100	92	11
Hardin	71	60	69	1,452	70	101,640	2	70	70	101	12
Harrison	61	60	31	227	117	26,559	3	37	90	80	74
Henry	100	....	80	809	100	80,900	20	70	95	92	....
Highland	61	58	78	241	61	14,701	5	69	86	74	85
Hocking	90	....	50	563	100	56,300	....	80	100	95	100
Holmes	69	67	75	728	87	63,336	3	64	97	94	52
Huron	69	75	71	1,282	100	128,200	10	65	92	91	92
Jackson	59	85	96	127	119	15,113	4	11	79	79	90
Jefferson	65	63	14	583	74	43,142	3	49	87	86	86
Knox	61	68	42	353	87	30,711	1	38	94	92	61
Lake	75	....	....	1,746	87	151,902	15	65	95	100	48
Lawrence	32	70	47	309	85	26,265	3	15	71	84	15
Licking	68	73	52	984	76	74,784	2	51	95	84	43
Logan	72	70	81	454	63	28,602	2	76	92	89	32
Lorain	78	75	78	2,396	83	198,868	3	65	96	96	75
Lucas	78	....	43	2,793	95	265,335	8	84	98	92	90
Madison	57	75	75	137	50	6,850	3	70	100	89	60
Mahoning	63	....	50	1,896	70	132,720	6	55	100	100	95
Marion	79	85	65	797	59	47,023	1	62	100	100	27
Medina	80	80	78	2,458	110	270,380	8	85	98	98	97

Meigs	67	100	70	539	68	36,652	2	15	100	77	58
Mercer	77	....	68	5,937	80	474,960	4	70	100	90	23
Miami	67	68	78	871	67	58,357	4	51	91	88	49
Monroe	65	88	63	1.261	105	132,405	3	12	75	80	72
Montgomery	60	....	68	1,152	42	48,384	10	38	80	86	48
Morgan	64	53	33	390	87	33,930	4	24	88	81	78
Morrow	81	70	66	1,031	72	74,232	3	54	95	89	78
Muskingum	51	75	39	854	83	70,882	3	26	73	86	93
Noble	41	50	28	681	99	67,419	2	10	83	76	67
Ottawa	80	100	100	816	33	26,928	1	75	100	100	5
Paulding	81	75	61	436	100	43,600	....	64	95	94	6
Perry	61	65	27	502	72	36,144	....	38	95	94	98
Pickaway	72	100	71	334	66	22,044	....	68	112	90	78
Pike	60	71	75	486	58	28,188	6	61	93	95	77
Portage	71	90	65	6,856	82	562,192	6	57	98	91	92
Preble	82	....	83	442	67	29,614	2	43	97	97	93
Putnam	82	73	53	847	66	55,902	5	52	74	68	2
Richland	66	60	53	1,286	75	96,450	5	54	89	83	56
Ross	77	60	60	794	62	49,228	1	43	94	81	49
Sandusky	79	....	33	2,122	87	184,614	4	80	95	65	4
Scioto	58	....	....	977	95	92,815	....	50	85	83	25
Seneca	80	....	49	1,438	89	127,982	5	64	88	91	77
Shelby	60	100	105	829	75	62,175	....	25	100	100	63
Stark	65	80	82	3.245	102	330,990	9	53	92	86	48
Summit	70	65	67	2,912	101	294,912	12	53	89	87	53
Trumbull	68	98	75	3,025	90	272,250	8	42	98	93	92
Tuscarawas	67	65	53	1,615	81	130,815	4	74	95	100	46
Union	81	63	80	256	58	14,848	1	61	94	69	8
Van Wert	64	75	66	942	80	75,360	5	35	94	88	5
Vinton	53	55	70	283	75	21,225	1	13	85	86	79
Warren	44	70	75	431	41	17,671	1	75	86	82	46
Washington	54	76	52	1,866	96	179,136	4	13	87	78	79
Wayne	81	100	63	3,595	112	402,640	2	58	96	85	75
Williams	92	100	62	803	125	100,375	5	69	100	103	10
Wood	92	100	50	931	116	107,996	9	81	96	93	20
Wyandot	83	96	77	656	69	45,264	....	64	96	96	13
Averages	69	78	64		82		4	48	92	87	53
Totals				111,390		9,135,464					

OFFICIAL REPORT

OF THE

Ohio State Board of Agriculture

On the Acreage and Product of Corn and the Condition of Other Crops, December 1, 1903.

The following report presents a careful estimate of corn production for the present year, and the condition of other crops as estimated from the returns received from the township crop correspondents of the department.

In computing the production of corn, the area, as reported by township assessors, is taken as the basis for estimating the total bushels produced in each county and for the state.

WHEAT—Condition compared with an average	78 per cent.
" Crop of 1903 sold as soon as threshed	41 per cent.
" Damage to growing crop by Hessian fly	2 per cent.
" Damage to growing crop by white grub	1 per cent.
CORN—Area planted as returned by township assessors	2,990,827 acres
" Average yield per acre	29.1 bushels
" Total estimated product for 1903	87,107,237 bushels
" Put into silo	2 per cent.
" Average date cribbing began	October 20.
CLOVER—Area sown in 1902 cut for seed	33 per cent.
" Average yield per acre	1.30 bushels
APPLES—Probable total yield compared with an average	48 per cent.
POTATOES—Probable average yield per acre	82 bushels
TOBACCO—Probable average yield per acre	757 pounds
CATTLE—Being fed for spring market compared with last year	67 per cent.
SHEEP—Being fed for mutton compared with last year	71 per cent.

On November first, the condition of wheat showed 81 per cent. of an average. The present report indicates a condition 3 per cent. lower. It has been apparent that some of the very late seeded wheat would not get a vigorous start before the setting in of winter, and that some would not make any appearance. Some wheat that was expected to advance rapidly has not come up to expectations, and this, perhaps, accounts for the slight decline as compared with last month. A considerable portion of the wheat, while not so large and strong as a good average, seems to be healthy and prepared to withstand an ordinary winter. A few fields will undoubtedly be plowed up in the spring, but the total area will not be greatly reduced from the present showing. A favorable winter is necessary to a fair showing in the spring. A great deal of the wheat could not overcome the results of severe freezing and thawing.

The corn product for 1902 as returned by township assessors was 122,675,349 bushels. The estimated product for the present year, as shown in this report, is 87,107,237 bushels, a decrease as compared with last year of about 29 per cent. The area for the present year is about 169,000 acres less than the area of last year and the product per acre about eight bushels less.

The corn crop was very late, but the season continued late and there was ample time and favorable weather for maturing, but the results of husking have proven that the crop has not produced even as heavily as was anticipated some time ago.

The potato crop has borne out quite well the estimate made last month when the crop was given in acres, product per acre, and total product for the state.

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1903.

Counties.	Wheat.				Corn.				
	Condition compared with an average.	Amount of crop of 1903 sold as soon as threshed.	Damage to growing crop by Hessian fly.	Damage to growing crop by white grub.	Area planted in 1903 as returned by township assessors.	Average yield per acre.	Total estimated product for 1903.	Put into silo.	Date cribbing began days after Oct. 1st.
	per ct.	per ct.	per ct.	per ct.	acres.	bu.	bushels.	per ct.	
Adams	70	40	2	1	34,407	20.0	688,140	1	27
Allen	100	50	1	....	30,493	15.0	457,385	....	20
Ashland	76	26	1	3	24,971	36.7	916,436	....	21
Ashtabula	81	19	3	....	13,766	29.5	406,097	25	22
Athens	81	38	2	....	10,809	23.5	254,012	2	11
Auglaize	85	48	3	....	45,267	40.4	1,828,787	....	17
Belmont	59	38	2	2	18,642	21.3	398,075	5	25
Brown	80	35	4	1	44,535	25.5	1,135,643	3	20
Butler	66	49	3	2	53,766	25.9	1,392,539	1	28
Carroll	81	18	10	3	12,331	25.8	318,140	1	22
Champaign	72	55	3	....	62,259	28.3	1,761,930	2	15
Clark	69	60	2	2	50,414	25.0	1,200,350	2	16
Clermont	66	40	1	....	34,153	23.8	812,841	1	19
Clinton	76	59	3	4	57,676	19.7	1,136,117	1	17
Columbiana	89	11	3	1	16,038	30.0	481,140	2	21
Coshocton	45	37	3	1	21,684	23.3	505,237	....	22
Crawford	84	41	4	....	38,499	35.3	1,359,015	....	15
Cuyahoga	90	20	....	2	9,476	31.7	300,389	5	21
Darke	75	62	6	2	86,729	33.6	2,914,100	....	17
Defiance	96	42	1	4	31,048	33.0	1,024,364	....	27
Delaware	87	38	1	....	38,463	29.7	1,142,341	4	22
Erie	93	50	4	3	16,109	33.2	534,819	1	12
Fairfield	60	54	1	1	48,489	33.8	1,638,928	2	18
Fayette	77	80	2	2	56,540	20.0	1,130,800	1	35
Franklin	70	45	5	1	64,177	27.7	1,777,703	2	17
Fulton	91	29	2	....	36,283	36.7	1,331,586	2	19
Gallia	66	46	2	3	18,386	22.5	413,685	....	19
Geauga	89	19	2	....	8,961	32.1	287,648	22	24
Greene	80	10	5	3	55,872	25.0	1,396,800	8	10
Guernsey	71	21	1	....	16,104	17.3	278,599	1	22
Hamilton	90	75	....	....	18,268	25.0	456,700	5	30
Hancock	88	36	2	....	51,952	36.7	1,906,638	....	19
Hardin	89	41	2	2	44,910	33.7	1,513,467	3	13
Harrison	66	18	....	....	10,377	21.7	225,181	3	15
Henry	90	50	5	....	59,718	38.3	2,287,199	....	25
Highland	67	39	3	6	54,219	20.3	1,100,646	....	27
Hocking	60	38	....	1	13,483	22.5	314,368	....	13
Holmes	86	38	2	1	23,559	17.0	400,503	....	22
Huron	92	35	3	1	31,742	30.0	952,260	1	21
Jackson	76	36	....	....	10,908	18.3	119,616	....	20
Jefferson	79	22	2	1	10,544	26.9	283,584	4	20
Knox	78	39	4	1	29,338	29.1	853,736	....	19
Lake	93	17	1	....	6,000	31.7	190,200	8	30
Lawrence	53	77	1	1	14,619	18.3	267,528	5	18
Licking	67	34	2	....	50,294	29.6	1,488,702	1	16
Logan	76	63	8	1	49,724	31.0	1,541,444	....	15
Lorain	85	35	2	1	19,106	30.2	577,001	3	22
Lucas	93	56	....	....	20,572	35.0	720,020	2	21
Madison	96	86	2	2	77,969	25.0	1,949,225	1	27
Mahoning	81	24	2	1	13,032	27.5	358,380	13	25
Marion	78	59	4	1	47,038	34.6	1,627,515	4	22
Medina	83	33	....	3	21,060	29.0	610,740	3	18
Meigs	66	45	1	2	12,360	22.5	278,100	....	26
Mercer	81	51	4	1	44,848	27.5	1,233,320	....	29
Miami	88	45	10	3	54,490	36.7	1,999,783	1	13
Monroe	75	50	....	5	16,421	23.5	385,894	....	16
Montgomery	73	55	3	....	45,936	27.5	1,263,240	1	13
Morgan	59	34	....	1	13,294	23.9	317,727	....	26
Morrow	86	48	3	....	27,033	32.0	865,056	....	17
Muskingum	53	34	1	....	25,837	22.3	576,165	1	20
Noble	66	16	1	....	14,815	23.8	352,597	1	17
Ottawa	100	50	....	....	20,148	30.0	604,440	....	20
Paulding	90	50	3	....	48,962	30.0	1,468,860	....	10

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1903—Continued.

Counties.	Wheat.				Corn.				
	Condition compared with an average.	Amount of crop of 1903 sold as soon as threshed.	Damage to growing crop by Hessian fly.	Damage to growing crop by white grub.	Area planted in 1903 as returned by township assessors.	Average yield per acre.	Total estimated product for 1903.	Put into silo.	Date cribbing began days after Oct. 1st.
	per ct.	per ct.	per ct.	per ct.	acres.	bu.	bushels.	per ct.	
Perry	68	24	2	1	15,714	24.0	377,136	....	15
Pickaway	61	60	3	....	71,885	33.1	2,379,294	....	13
Pike	62	34	....	....	24,098	24.5	590,401	....	23
Portage	83	27	2	....	14,599	30.0	437,970	10	28
Preble	75	50	2	3	54,333	31.0	1,684,323	....	17
Putnam	78	66	2	2	58,452	36.0	2,104,272	10	22
Richland	76	41	5	3	28,233	30.0	846,990	....	14
Ross	70	55	1	....	61,612	25.6	1,577,267	....	28
Sandusky	88	22	3	3	42,973	35.0	1,504,055	1	17
Scioto	60	50	....	....	21,566	16.3	351,526	....	15
Seneca	90	39	....	5	48,326	34.3	1,657,582	....	26
Shelby	77	63	5	1	49,718	23.3	1,158,429	....	30
Stark	85	25	2	....	30,613	33.4	1,022,474	....	17
Summit	86	24	3	5	16,451	31.0	509,981	16	25
Trumbull	92	33	1	1	13,314	28.2	375,455	9	18
Tuscarawas	70	36	2	....	19,715	24.5	483,018	1	17
Union	76	59	3	3	51,411	27.6	1,418,944	2	22
Van. Wert	70	33	5	2	47,354	28.0	1,325,912	....	17
Vinton	56	20	....	....	8,624	14.0	120,736	....	11
Warren	54	50	1	1	46,839	22.0	1,030,458	2	24
Washington	68	33	....	....	18,395	23.4	430,443	....	22
Wayne	87	31	2	3	37,397	35.0	1,308,895	....	17
Williams	95	27	....	....	31,664	32.0	1,013,248	....	30
Wood	86	56	4	3	77,690	39.5	3,068,755	1	23
Wyandot	84	51	1	4	40,928	39.0	1,596,192	....	26
Averages	78	41	2	1		29.1		2	Oct. 20
Totals					2,990,827		87,107,237		

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1903—Continued.

Counties.	Clover.		Apples.	Potatoes.	Tobacco.	Cattle.	Sheep.
	Area sown in 1902 cut for seed.	Average yield per acre.	Probable total yield compared with an average.	Probable average yield per acre.	Probable average product per acre.	Number being fed for spring market compared with last year.	Number being fed for mutton compared with last year.
	per cent	per cent	per cent	bushels	pounds	per cent	per cent
Adams	43	1.32	80	62	831	42	40
Allen	50	1.00	50	40	....	75	50
Ashland	22	1.00	49	112	....	58	79
Ashtabula	9	1.42	32	71	....	64	68
Athens	23	1.58	26	81	....	56	60
Auglaize	40	1.20	54	70	....	54	53
Belmont	4	1.75	13	83	500	55	60
Brown	20	2.25	45	40	675	95	85
Butler	21	1.13	27	71	1,350	64	69
Carroll	13	1.13	72	78	....	70	79
Champaign	67	1.33	73	77	700	72	70
Clark	36	1.25	53	54	650	64	69
Clermont	37	1.25	36	71	967	70	75
Clinton	28	1.46	70	39	600	53	66
Columbiana	5	.92	41	83	....	76	70
Coshocton	8	1.02	42	89	....	46	61
Crawford	46	1.08	56	77	....	76	74
Cuyahoga	5	1.00	83	95	....	80	78
Darke	61	1.14	67	61	830	59	55
Defiance	63	1.00	56	71	850	80	81
Delaware	33	1.08	50	93	....	64	80
Erie	35	1.31	98	80	....	91	94
Fairfield	31	1.31	51	70	....	56	58
Fayette	33	1.25	37	50	....	59	82
Franklin	28	1.19	70	90	....	67	72
Fulton	39	1.13	79	81	....	91	79
Gallia	8	1.08	11	73	300	50	26
Geauga	12	2.33	54	78	....	58	57
Greene	20	1.00	40	75	....	90	80
Guernsey	12	1.20	20	66	....	58	72
Hamilton	....	....	40	30	....	....	....
Hancock	37	1.31	65	94	....	75	81
Hardin	43	1.31	40	56	....	85	102
Harrison	15	1.70	57	82	....	63	73
Henry	37	1.33	87	90	....	73	75
Highland	42	1.43	52	56	650	58	50
Hocking	10	1.75	53	98	....	78	58
Holmes	15	1.92	67	57	....	70	74
Huron	49	.86	71	78	....	84	86
Jackson	10	1.10	15	91	....	46	40
Jefferson	10	1.13	47	98	....	71	86
Knox	20	.98	32	74	....	61	78
Lake	3	2.00	67	92	....	88	100
Lawrence	7	2.50	12	78	....	10	15
Licking	21	.96	42	69	....	60	74
Logan	51	1.33	68	58	....	65	80
Lorain	17	1.55	42	74	....	66	68
Lucas	43	1.83	86	107	....	89	....
Madison	39	1.12	72	69	....	48	65
Mahoning	18	1.83	52	91	....	84	82
Marion	42	1.31	53	78	....	73	93
Medina	27	1.58	91	77	....	72	76
Meigs	5	1.67	7	60	....	37	100
Mercer	54	1.25	40	59	....	70	57
Miami	37	1.00	73	70	887	95	113
Monroe	55	3.00	13	95	800	43	48
Montgomery	30	1.25	40	35	600	80	90
Morgan	19	1.21	19	70	700	52	62
Morrow	50	1.00	61	71	....	76	88
Muskingum	14	1.05	24	80	....	52	57
Noble	35	1.17	15	85	1,000	55	57
Ottawa	....	....	50	25	....	100	....
Paulding	73	1.08	34	60	....	100	95

OFFICIAL REPORT OF THE OHIO DEPARTMENT OF AGRICULTURE ON THE ACREAGE AND PRODUCT OF CORN, AND THE CONDITION OF OTHER CROPS, DECEMBER 1, 1903—Concluded.

Counties.	Clover.		Apples.	Potatoes.	Tobacco.	Cattle.	Sheep.
	Area sown in 1902 cut for seed.	Average yield per acre.	Probable total yield compared with an average.	Probable average yield per acre.	Probable average product per acre.	Number being fed for spring market compared with last year.	Number being fed for mutton compared with last year.
	per cent	per cent	per cent	bushels	pounds	per cent	per cent
Perry	15	1.50	30	94	....	66	71
Pickaway	53	1.43	62	80	....	56	50
Pike	39	1.62	30	63	....	63	35
Portage	11	1.19	60	77	....	83	67
Preble	42	.80	70	61	770	78	100
Putnam	49	1.22	52	86	700	48	76
Richland	45	1.50	49	74	....	55	64
Ross	41	1.25	38	64	....	76	73
Sandusky	25	.50	72	127	....	70	60
Scioto	38	1.50	25	50	....	28	50
Seneca	67	.96	64	83	....	54	68
Shelby	66	1.17	35	70	700	83	83
Stark	17	.70	50	96	....	86	88
Summit	18	.50	68	90	....	70	78
Trumbull	20	2.25	38	83	....	84	85
Tuscarawas	13	1.20	69	77	....	61	55
Union	54	1.25	63	64	....	63	71
Van Wert	55	1.17	33	52	....	68	43
Vinton	75	1.00	17	69	....	48	63
Warren	29	1.31	43	44	590	53	65
Washington	17	.58	10	79	....	53	44
Wayne	48	.86	44	99	1,000	70	89
Williams	68	1.00	70	108	....	100	100
Wood	76	1.25	75	94	....	74	70
Wyandot	48	1.25	65	64	....	84	96
Averages	33	1.30	48	82	757	67	71

TABLE SHOWING THE ANNUAL PRODUCTION AND PRICE OF WHEAT AND CORN FOR THE YEARS 1850 TO 1903, INCLUSIVE.

Year.	Bushels of Wheat.	Average. Number of Bushels per Acre.	Price per Bushel.		Bushels of Corn.	Average Number of Bushels per Acre.	Price per Bushel.	
			Range.	Average.			Range.	Average.
1850	31,500,000	18	$0 70 to $1 10	$0 89	56,619,608	36.8	$0 24 to $0 51	$0 38
1851	25,309,225	15.2	58 to 78	69	61,271,382	36.7	30 to 94	38
1852	23,043,737	14.1	59 to 63	60	58,165,517	33.6	25 to 45	39
1853	17,118,311	12	60 to 85	73	73,436,070	40	37 to 55	42
1854	11,989,110	8	85 to 1 70	1 19	52,171,551	26	40 to 55	49
1855	19,569,320	13.81	1 10 to 2 00	1 54	87,587,434	39.7	55 to 80	67
1856	15,333,837	10.2	90 to 1 70	1 27	57,802,515	27.7	32 to 63	42
1857	25,397,614	14	1 00 to 1 60	1 18	82,555,186	36.6	48 to 80	59
1858	17,655,483	10.4	67 to 1 00	77	50,863,582	27.7	25 to 61	42
1859	13,317,967	7.2	90 to 1 70	1 15	68,780,846	29.5	50 to 90	72
1860	23,640,356	13.8	93 to 1 38	1 17	91,588,704	38.2	39 to 80	50
1861	20,055,424	11	65 to 1 12	93	74,858,878	33.5	28 to 50	34
1862	20,764,887	12	72 to 1 00	86	62,704,887	30	27 to 40	31
1863	20,452,410	11.36	82 to 1 30	1 04	54,614,617	27	35 to 70	53
1864	15,541,885	9.33	95 to 2 12	1 41	54,053,491	27	63 to 1 27	1 03
1865	13,234,139	9	1 25 to 2 07	1 78	68,053,668	35	56 to 1 29	77
1866	5,821,747	4.5	1 75 to 2 80	2 27	80,386,320	36.5	45 to 65	54
1867	13,350,721	11.51	1 95 to 3 50	2 79	63,875,064	29.8	59 to 98	79
1868	16,480,059	11.31	1 90 to 2 65	2 31	76,725,288	34.4	82 to 1 08	92
1869	26,499,729	15.37	1 15 to 1 98	1 57	62,443,346	28.4	57 to 1 10	73
1870	18,726,341	11.29	1 08 to 1 33	1 15	88,565,299	37.5	69 to 1 05	83
1871	22,274,378	13.27	1 10 to 1 55	1 27	98,363,060	36.7	50 to 79	56
1872	18,987,664	11.22	1 13 to 2 08	1 58	103,058,234	40.9	44 to 57	49
1873	21,974,385	12.61	1 30 to 1 80	1 56	84,049,328	35.1	39 to 50	42
1874	26,806,818	14.51	1 03 to 1 60	1 38	101,815,494	39.8	42 to 75	60
1875	17,867,967	9.22	1 03 to 1 75	1 16	97,825,024	34.1	58 to 87	72
1876	15,354,569	10.18	1 00 to 1 50	1 10	112,552,642	36.8	40 to 73	51
1877	27,306,566	15.63	1 08 to 2 15	1 41	101,884,305	32.5	40 to 57	46
1878	35,218,783	16.58	85 to 1 35	1 11	114,839,107	37.8	48 to 49	42
1879	41,052,120	17.78	85 to 1 15	96	96,908,800	34	31 to 45	37
1880	48,540,307	17.20	93 to 1 37	1 16	105,414,504	38.9	42 to 51	42
1881	38,102,633	13.8	88 to, 1 39	1 10	78,712,796	31	40 to 87	49
1882	42,112,103	15.59	95 to 1 50	1 32	90,869,137	34	56 to 87	72
1883	27,169,738	10.67	95 to 1 17	1 05	64,001,618	24.2	44 to 76	54
1884	36,396,119	14.4	80 to 1 10	1 01	87,797,813	33.3	40 to 62	53
1885	24,183,430	9.8	72 to 1 09	89	112,192,744	39	37 to 59	47
1886	37,660,681	14	74 to 1 00	88	88,818,556	33.5	32 to 48	39
1887	28,400,000	10.4	71 to 89	80	83,118,838	30.5	34 to 55	40
1888	26,160,994	11.7	71 to 96	85	111,155,506	38.9	44 to 61	52
1889	31,663,448	14.6	73 to 1 15	93	87,838,192	32.3	30 to 49	37

1890	31,509,676	13.8	75 to 1 02	83	63,694,215	24.5	27 to 56	36
1891	45,063,480	17.5	82 to 1 16	99	86,500,000	33	49 to 77	60
1892	38,381,598	14.4	73 to 1 01	90	81,892,100	30.8	39 to 67	48
1893	43,121,599	17.2	52 to 93	64	77,229,446	25	37 to 45	42
1894	45,587,534	20	48 to 56	51	88,805,607	25	35 to 59	45
1895	28,759,647	11.9	53 to 90	66	102,447,445	33.9	24 to 56	41
1896	19,511,788	8.53	56 to 97	72	134,796,274	41	18 to 33	27
1897	36,718,686	16.15	72 to 1 00	88	103,004,970	34.34	22 to 34	23
1898	41,041,671	15.56	64 to 1 45	87	114,214,148	37.35	27 to 41	34
1899	41,469,703	14.02	68 to 77	72	115,138,669	36.74	29 to 40	36
1900	10,866,155	6	70 to 89	75	143,161,675	38	32¾ to 47	40
1901	31,150,373	14.57	64 to 90	77	92,368,811	25.74	39 to 74	52
1902	36,901,212	18.1	63 to 84	74	122,675,349	37.3	40 to 62	56
1903 (estimated)	29,297,408	14.4	70 to 93	78	87,107,237	29.1	41 to 53	45

TABLE SHOWING THE AVERAGE PRODUCTION AND PRICE OF WHEAT AND CORN BY DECADES.

Decades.	Average bushels of wheat.	Average bushels per acre.	Range of price per bushel.	Average price per bushel.	Average bushels of corn.	Average bushels per acre.	Range of price per bushel.	Average price per bushel.
1850 to 1860	20,023,460	12.29	$0 58 to $2 00	$1 00	64,920,369	33.4	$0 24 to $0 90	$0 48
1860 to 1870	17,584,085	10.91	60 to 3 50	1 61	68,930,426	32	27 to 1 29	64
1870 to 1880	24,656,959	13.29	85 to 2 15	1 27	99,986,129	36.5	38 to 1 05	54
1880 to 1890	34,038,945	13.21	71 to 1 50	1 00	90,991,979	33.5	30 to 87	45
1890 to 1900	38,042,989	15.19	48 to 1 45	77	89,648,770	32	18 to 77	39

AVERAGE PRICES OF OTHER FARM PRODUCTS THAN WHEAT AND CORN IN THE LOCAL MARKETS OF OHIO FROM 1855 TO 1903, INCLUSIVE.

	Barley.	Oats.	Rye.	Hay.	Potatoes.
	Per Bush.	Per Bush.	Per Bush.	Per Ton.	Per Bush.
1855	$1 35	$0 29½	$0 70	$14 71	....
1856	1 58	46	91	21 00	....
1857	58	36	58	18 46	....
1858	67	57	82	15 38	....
1859	76	43	86	17 73	....
1860	69	27	56	12 62	....
1861	60	30	48	11 85	....
1862	1 36	58	76	16 34	....
1863	1 51	78½	1 35	27 16	....
1864	1 28	52	1 15	26 00	....
1865	1 41	42	80	12 63	....
1866	1 53	57	1 28	19 76	....
1867	2 11	69	1 62	14 80	....
1868	2 37	64	1 28	16 42	....
1869	1 26	54	92	17 44	....
1870	1 00	46	91	18 45	....
1871	78	37	85	20 79	....
1872	87	36	76	22 18	....
1873	1 51	48	93	17 16	....
1874	1 41	59	1 06	20 98	....
1875	1 20	38	74	17 66	....
1876	90	37	74	11 67	....
1877	52	29	59	9 86	....
1878	1 00	27	54	10 79	....
1879	89	34	82	15 87	....
1880	98	38	1 04	16 36	....
1881	1 05	50	94	17 90	1 07
1882	76	39	62	12 39	67
1883	76	34	62	11 63	46
1884	80	32	63	12 81	50
1885	86	30	63	12 16	48
1886	61	29	58	11 17	53
1887	81	33	62	14 79	88
1888	78	26	52	12 74	40
1889	57	27	50	10 56	52
1890	77	48	81	10 58	97
1891	70	33	85	11 25	45
1892	69	33	73	11 10	55
1893	64	32	55	12 55	74
1894	60	35	52	10 95	66
1895	56½	27	53	12 70	49
1896	36	20	36	12 83	28
1897	39	22	29	11 00	48
1898	47	27	51	8 65	57
1899	52	27	62	10 10	49
1900	51	25	59	13 95	43
1901	62	34	60	11 00	60
1902	57	37	54	10 50	65
1903	58	38	59	12 00	75

TABULAR STATEMENT EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS RETURNED BY THE SEVERAL COUNTY AUDITORS, FOR THE YEARS 1902 AND 1903.

Counties.	Number of Horses.		Number of Cattle.		Number of Mules.		Number of Sheep.		Number of Hogs.	
	1902.	1903.	1902.	1903.	1902.	1903.	1902.	1903.	1902.	1903.
Adams	4,809	4,641	10,432	10.615	223	218	7,598	5,890	8,269	10,478
Allen	8,981	9,087	15,799	17,614	85	92	19.205	17,487	26,238	23,354
Ashland	7,180	7,571	14,650	15,349	79	83	36,243	34,314	17,925	20,808
Ashtabula	9,186	9,906	28,882	32,201	25	20	12,693	10,972	4,916	5,465
Athens	4,375	4,438	11,070	10,370	95	113	46,063	42,075	2,856	2,954
Auglaize	8,701	8,541	16,232	17,168	111	113	10,128	8,614	25,091	22,407
Belmont	8,597	8,508	19.550	18,208	368	428	72,968	65,923	9,735	9,758
Brown	6,542	6,420	12,979	12,897	229	274	9,579	7,139	18,436	20,069
Butler	10,447	10,440	16,622	17,011	433	521	7,586	7,232	24,417	21,780
Carroll	4,197	4,365	12,941	13.654	67	81	52,082	50,675	8,727	9,102
Champaign	10,429	10,453	20.020	20,258	219	222	21,929	17,991	33,409	34,498
Clark	10,593	10,899	18,281	19,469	276	375	22,440	20,003	24,056	25,059
Clermont	6,593	6,606	10,657	10,435	534	566	6,742	4,375	15,012	14,549
Clinton	9,356	9,568	16,390	17,250	344	380	22,404	16,996	38,230	37,210
Columbiana	9,489	10,024	20,501	21,839	73	103	30,127	26,758	11,359	11,927
Coshocton	5,814	5,968	17,531	18,306	139	166	74,752	72,661	14,056	15,736
Crawford	8,521	8,713	16,532	17,080	113	128	42,153	40,976	32,416	30,261
Cuyahoga	18,032	17,598	16,247	16,615	63	59	6,344	5,496	2,526	2,794
Darke	15,617	16,534	25,889	26,928	327	317	7,238	6,144	38,755	39,670
Defiance	6,261	6,352	11,816	10,519	70	58	15,996	14,724	14,933	15,360
Delaware	7,700	7,727	19,133	21,196	90	96	45,189	38,526	24,887	24,420
Erie	5,560	5,660	7,911	8,418	9	14	11,942	10,691	7,410	7,235
Fairfield	9,591	9,666	21,930	22.346	138	170	15,456	13,780	31,248	31,158
Fayette	8,979	9,289	19,819	20,070	267	269	11,333	9,710	33,234	29,967
Franklin	14,165	14,804	20,767	21,037	103	160	11,422	10,507	22,735	22,138
Fulton	7,362	7,269	17,657	18,030	30	30	19,898	16,952	22,133	21,298
Gallia	4,690	4,520	11,741	11,491	136	178	11,210	9,144	5,512	5,454
Geauga	5,262	5,248	21,570	21,725	35	24	9,577	7,013	4,433	4,368
Greene	9,878	9,757	18,678	18,956	230	263	18,548	15,642	27,736	30,099
Guernsey	5,463	5,094	13,935	13,639	234	277	67,245	61,659	6,138	6,826

Hamilton	16,625	16,498	17,700	17,907	1,014	1,017	2,518	1,992	10,307	9,865
Hancock	10,395	10,468	23,179	24,472	61	63	38,265	36,428	33,971	33,075
Hardin	7,694	8,130	18,428	19,480	72	95	33,553	31,798	31,932	31,859
Harrison	4,827	4,988	11,222	11,415	69	105	96,304	94,425	5,959	6,209
Henry	6,987	7,085	14,675	15,427	56	56	8,156	7,748	17,963	18,494
Highland	8,538	8,437	20,189	20,462	190	375	19,975	14,690	34,104	32,731
Hocking	3,555	3,568	9,772	9,414	60	78	16,243	13,911	5,260	5,643
Holmes	6,786	7,132	17,862	17,978	54	57	25,190	23,705	20,669	22,529
Huron	7,877	7,855	15,214	15,685	77	78	52,417	47,172	14,677	15,649
Jackson	3,603	3,441	11,051	10,349	762	768	7,738	5,650	3,456	3,557
Jefferson	5,369	5,595	12,035	11,962	237	364	49,160	45,023	5,625	6,093
Knox	7,148	7,735	17,625	20,317	124	126	94,063	95,822	20,511	24,363
Lake	4,205	4,428	7,588	7,727	8	13	5,750	4,460	1,580	2,031
Lawrence	3,869	3,767	9,418	9,607	537	491	2,590	1,711	3,471	4,505
Licking	12,188	12,378	28,430	30,307	147	143	96,295	90,760	29,162	30,896
Logan	9,555	9,768	19,772	20,257	89	103	31,790	29,343	29,538	30,840
Lorain	9,101	9,172	23,163	23,903	33	36	22,914	18,774	8,401	9,433
Lucas	9,751	9,682	10,039	10,140	73	64	2,699	1,993	8,176	9,097
Madison	9,470	9,644	24,111	24,032	210	302	21,985	15,842	35,342	36,882
Mahoning	8,207	8,515	18,925	19,589	81	97	21,674	18,557	7,685	8,305
Marion	7,339	7,683	16,693	17,333	167	169	49,401	48,701	39,278	30,518
Medina	8,038	8,179	17,011	18,134	107	155	26,629	23,098	10,943	11,072
Meigs	4,792	4,603	10,696	10,010	200	214	26,627	22,593	3,211	3,180
Mercer	9,217	9,430	17,449	18,125	126	128	12,746	10,193	27,107	26,858
Miami	11,175	11,542	15,370	16,064	276	289	4,085	3,347	17,891	18,233
Monroe	5,030	5,268	12,570	12,203	68	69	13,420	9,326	4,779	5,927
Montgomery	15,117	16,140	21,289	20,915	243	276	3,096	2,500	22,094	22,406
Morgan	4,867	4,560	13,572	13,043	38	26	62,039	54,973	4,667	5,031
Morrow	7,270	7,388	15,017	15,837	45	71	62,114	72,400	14,772	16,282
Muskingum	9,204	8,903	25,389	24,525	161	182	85,691	82,556	11,442	12,277
Noble	4,602	4,583	14,834	14,581	44	34	56,170	48,434	6,711	7,459
Ottawa	5,683	5,395	9,155	9,040	47	50	5,174	4,918	8,444	8,070
Paulding	5,369	5,923	8,134	8,369	64	65	8,912	8,095	11,382	11,643
Perry	5,681	5,824	15,582	13,791	150	122	29,497	28,265	9,037	9,589
Pickaway	9,328	9,302	22,087	22,990	304	347	8,899	6,886	26,627	26,068
Pike	3,903	3,947	6,394	6,782	172	177	4,525	4,089	6,287	7,165
Portage	8,172	8,079	22,656	22,266	101	77	20,883	16,982	7,301	7,553
Preble	9,850	9,937	17,719	18,824	413	346	6,081	5,290	30,655	29,481
Putnam	8,572	8,953	18,788	19,704	61	54	12,670	10,979	38,567	28,801
Richland	8,909	8,935	17,985	18,817	133	150	39,780	39,248	23,770	25,275
Ross	9,982	10,255	22,662	22,299	158	156	10,205	9,004	24,744	25,215
Sandusky	8,376	8,686	15,396	15,800	47	38	17,107	15,195	16,178	15,188
Scioto	5,375	5,314	8,925	9,200	571	528	2,067	1,809	6,041	7,512
Seneca	9,202	9,207	17,063	19,292	91	74	37,416	35,498	28,034	28,913
Shelby	9,034	9,157	16,147	16,096	119	115	7,545	7,848	19,769	16,412

TABULAR STATEMENT EXHIBITING THE NUMBER OF HORSES, CATTLE, MULES, SHEEP AND HOGS RETURNED BY THE SEVERAL COUNTY AUDITORS, FOR THE YEARS 1902 AND 1903—Concluded.

Counties.	Number of Horses.		Number of Cattle.		Number of Mules.		Number of Sheep.		Number of Hogs.	
	1902.	1903.	1902.	1903.	1902.	1903.	1902.	1903.	1902.	1903.
Stark	14,564	14,836	27,542	26,580	361	369	19,971	16,565	23,199	22,993
Summit	9,108	8,985	20,154	20,585	208	95	7,560	6,722	9,391	9,690
Trumbull	10,325	10,458	31,628	30,676	58	82	21,993	16,540	6,245	6,276
Tuscarawas	7,282	7,417	21,091	20,720	219	229	29,198	27,644	13,070	13,083
Union	8,023	8,190	17,596	17,738	75	95	38,553	32,485	33,642	34,069
Van Wert	8,748	8,184	13,672	13,127	221	191	13,833	11,674	23,021	23,198
Vinton	2,407	2,347	6,407	6,031	106	112	19,713	17,615	2,111	2,214
Warren	9,238	9,650	16,851	18,072	381	388	9,051	5,860	27,501	20,433
Washington	7,389	7,107	16,934	15,333	158	143	32,679	27,433	6,073	6,221
Wayne	11,500	11,911	25,210	25,500	180	227	22,210	19,521	26,695	27,953
Williams	6,489	6,579	14,136	14,454	30	42	29,046	25,877	23,281	22,834
Wood	11,744	10,808	20,874	20,948	71	64	18,528	14,642	30,621	31,178
Wyandot	7,534	7,407	14,348	14,826	124	105	60,595	62,773	27,240	29,148
Totals	716,558	725,024	1,481,586	1,509,754	15,197	16,283	2,331,078	2,127,451	1,556,435	1,553,676

Horses	8,466	increase.
Cattle	28,168	increase.
Mules	1,086	increase.
Sheep	203,627	decrease.
Hogs	2,759	decrease.

TABLES OF COMPARATIVE STATISTICS AS COMPILED BY THE SECRETARY OF AGRICULTURE

COMPARATIVE TABLE SHOWING PRODUCTION OF WHEAT IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	178,584	150,417	125,325	218,156	304,058	241,235	97,769	199.005	340,920	273.430
Allen	524,268	473,816	49,611	560,722	400,583	328,024	318,955	451.775	540,700	440.896
Ashland	534,061	386,185	199,992	602,971	521,222	597,622	274,753	343,502	640,105	688.750
Ashtabula	154,276	121,544	51,554	241,819	291,870	200,208	69,913	132.485	224.074	252.818
Athens	87,075	108,126	128,315	151,795	181,279	202,247	191,676	130,891	178,271	159.048
Auglaize	862,655	697,791	26,310	775,151	509,909	399,480	365,547	566,304	767,827	548,451
Belmont	299,477	237,777	174,399	274,604	356,622	406,539	331,471	261,776	383,747	406,877
Brown	178,585	176,357	130,315	259,818	353.060	251,883	94,296	290,175	383,181	338,964
Butler	1,103,105	818,415	237,830	108,176	1,065,347	916,826	258,458	543,739	956,238	921,809
Carroll	204,374	183,182	80,854	207,543	274,745	250,066	138.622	122,356	239,344	276,070
Champaign	623,121	524,919	44,697	783,253	648,804	514,096	275,079	437,118	974,493	838,569
Clark	587,708	422,764	54,618	806,942	625,155	539,361	319,384	442,127	749,065	715,374
Clermont	113,865	117,341	74.808	192,959	269,413	162.288	49,276	216,692	296,308	271,791
Clinton	526,598	348,227	33,690	687,147	572,322	498,287	105,842	367.423	704,341	613,159
Columbiana	347,311	469,590	205,112	320,530	423,274	431,575	220,331	166,151	398,901	454,183
Coshocton	353,663	226,829	68,657	338,998	437,704	550,925	131,234	243,994	496,591	518,748
Crawford	499,291	364,681	144,479	650,523	453,157	482.632	195.698	344.773	512,106	519.764
Cuyahoga	199,345	212,816	72,019	202,621	219,437	162,382	79.742	141,978	226,981	242,137
Darke	1,253,069	1,180,245	2,137	1,351,096	1,065,613	774,220	572,758	796,963	1,462.139	1,055,095
Defiance	218,495	369,932	197,867	207,468	877,332	252,654	284.279	452,197	426,500	458,224
Delaware	136,167	131,695	50,637	479,210	279,802	208,277	62,604	159,482	353,012	344,522
Erie	347,229	265,323	61,513	388,458	354,051	414,918	182,373	237.095	379,368	463,621
Fairfield	591,968	399,879	82,395	677,034	736,986	679,559	222,234	406.864	741,640	739.855
Fayette	611,380	442,129	20,516	958,175	637,272	646.045	105,151	351,526	614,692	628,196
Franklin	453,293	409,985	64.551	716,942	598.842	563 884	70.477	363.176	643,579	737,669
Fulton	204,034	289,448	149,010	82,381	512,947	365,356	322,780	496,418	442,658	509,335
Gallia	85,019	131,520	199,466	216,132	268.480	242,274	206,417	192.651	261,210	230,067
Geauga	120,182	98,753	32.643	173,755	201,198	156.257	59,990	66,521	150,508	163,120
Greene	859,786	549,071	86.913	850,817	709,532	616,485	37,382	620,807	959,893	862,980
Guernsey	146,679	166,050	67,459	205.903	261.054	277,848	192,155	162 366	246,724	240,726
Hamilton	466,168	238,394	114.346	294,745	289,073	260,505	48,290	168.583	259,224	280,770
Hancock	867,477	776,659	88,553	946,112	759,325	626,425	401,044	695,428	914,310	711,883

COMPARATIVE TABLE SHOWING PRODUCTION OF WHEAT IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Hardin	469,907	498,913	76,888	620,912	396,011	289,929	219,319	342,380	506,589	424,988
Harrison	196,065	157,152	70,144	159,877	226,375	234,257	159,966	143,405	236,853	239,924
Henry	372,963	475,426	340,478	207,346	676,004	518,881	464,426	583,984	652,101	672,785
Highland	602,026	250,277	20,649	413,624	549,559	535,633	141,729	352,977	594,279	567,631
Hocking	112,283	79,579	33,972	158,223	218,415	189,996	200,905	108,986	148,365	159,295
Holmes	439,892	360,488	210,686	457,884	435,711	449,842	147,498	265,621	325,125	575,048
Huron	667,678	552,005	76,904	781,246	506,725	541,346	300,953	423,678	561,280	648,017
Jackson	50,162	64,235	85,555	134,424	163,863	141,424	109,462	116,945	165,213	124,300
Jefferson	216,457	179,125	117,194	177,028	272,035	293,037	243,564	151,436	259,595	256,503
Knox	326,189	249,389	209,751	526,682	543,823	621,728	166,459	301,897	553,667	644,339
Lake	64,341	45,683	14,274	100,367	107,577	91,714	56,076	56,733	101,012	112,111
Lawrence	35,903	70,037	73,565	101,183	97,307	67,438	51,028	82,561	129,060	102,511
Licking	319,634	223,336	92,001	615,650	634,725	416,127	188,523	276,716	715,916	741,844
Logan	609,775	500,450	45,119	739,302	414,629	328,759	218,496	253,941	610,978	454,599
Lorain	408,819	335,170	100,296	402,773	393,995	409,387	173,616	265,535	404,275	436,815
Lucas	193,038	204,711	160,815	46,565	332,367	262,385	196,192	198,909	248,477	297,543
Madison	239,983	302,144	28,197	891,327	655,771	420,933	48,078	256,573	678,834	622,718
Mahoning	255,104	245,291	111,987	231,788	326,816	408,650	119,012	117,701	308,894	402,860
Marion	380,462	244,409	94,822	605,021	350,654	323,423	136,513	251,082	523,426	483,642
Medina	431,984	398,232	135,949	311,808	452,360	429,131	119,134	289,969	449,172	561,547
Meigs	125,041	133,353	220,452	237,695	264,098	287,824	229,454	205,729	274,612	250,888
Mercer	565,285	595,153	9,029	766,255	446,749	367,945	360,080	556,136	764,392	515,740
Miami	957,574	747,099	99,305	876,799	861,354	668,198	565,799	496,159	1,082,571	951,112
Monroe	184,316	125,685	133,306	239,907	241,937	272,828	219,341	201,300	268,166	272,899
Montgomery	905,662	613,810	116,630	859,863	812,677	564,839	373,714	450,381	893,754	820,514
Morgan	112,575	141,974	111,445	234,544	206,117	228,180	256,094	209,280	231,058	177,118
Morrow	218,659	118,317	112,168	434,262	288,895	241,085	155,373	171,021	272,213	319,824
Muskingum	288,752	253,727	102,953	367,125	464,467	429,171	289,245	241,458	421,218	474,127
Noble	134,789	136,422	106,294	164,328	171,001	232,364	175,716	193,106	223,755	190,761
Ottawa	328,997	282,899	121,325	184,651	326,944	323,890	189,782	304,214	321,063	340,903
Paulding	241,148	354,369	356,381	74,639	302,566	120,950	205,530	395,159	280,151	237,331
Perry	183,569	145,070	33,073	252,250	329,685	306,435	233,332	193,292	262,864	248,519
Pickaway	885,657	685,119	114,004	994,225	800,881	951,527	167,068	628,283	995,617	661,938
Pike	108,481	141,117	112,698	203,170	258,229	228,109	138,219	202,996	275,604	202,270
Portage	362,178	303,799	192,354	370,435	457,506	370,609	130,141	179,519	372,139	422,489
Preble	1,061,637	649,550	1,647	952,659	922,193	601,159	459,883	568,561	922,364	723,090
Putnam	696,675	651,576	300,305	879,735	643,313	561,813	444,928	730,761	862,626	614,237

Richland	553,359	471,923	221,532	690,417	615,171	617,176	316,239	423,980	627,919	727,374
Ross	572,107	454,629	132,849	634,346	760,329	771,831	328,900	464,813	883,977	640,796
Sandusky	665,273	533,444	71,472	1,138,685	697,025	740,777	472,128	677,338	873,048	792,030
Scioto	147,060	193,688	244,817	246,556	288,328	263,944	152,346	153,666	247,476	215,339
Seneca	1,052,977	839,966	83,566	1,089,356	891,059	874,190	470,361	766,815	1,065,511	1,055,372
Shelby	805,963	646,641	6,407	713,427	505,042	351,181	321,904	452,382	786,867	541,761
Stark	978,880	784,088	571,534	775,863	993,695	900,724	299,291	447,385	908,250	1,021,223
Summit	488,085	404,454	304,516	535,302	614,415	525,724	241,912	247,642	530,332	599,064
Trumbull	188,209	180,176	68,465	274,151	296,383	245,415	55,433	122,770	255,749	285,943
Tuscarawas	417,197	245,283	63,053	374,922	515,940	500,700	201,480	299,399	503,875	527,635
Union	230,449	278,924	45,962	526,909	292,458	298,462	41,869	160,091	393,961	396,265
Van Wert	471,458	532,395	209,572	534,494	559,256	365,988	455,580	618,318	708,355	516,542
Vinton	58,714	43,520	50,452	101,428	134,096	107,085	88.650	78,035	106,679	112,742
Warren	446,659	332,929	54.288	456,352	529,844	411,365	44,267	346,980	585.264	576,531
Washington	221,023	196,019	244,163	411,392	394,084	417,713	425,406	399,742	482,794	434.150
Wayne	926,362	708,096	565,707	789,228	867,836	945,872	306.584	483.730	1,117.768	1.183,590
Williams	235,624	291,612	57,657	304,170	352,437	286.815	221,835	367,543	445,074	486.788
Wood	562,169	621,036	321,605	507,902	796,772	724.633	505,318	638,653	805,540	818.235
Wyandot	391,401	386,599	88,332	607,221	423,694	418,757	221,762	329,670	533,212	436,494
Total product	36,901,212	31,150,373	10,866,155	41,469,703	41,041,671	36,718,686	19,511,788	28,759,647	45,587,534	43,121,599
Total area	2,054,588	2,176,723	2,468,280	2,957,616	2,637,788	2,273,712	2,574,364	2,483,855	3,429,082	2,526,370

Average area for 10 years, 2,458,237 acres.
Average product for 10 years, 33,512,836 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels. (Includes Fall and Spring Barley.)									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	....	200	....	....	....	130	....	38	519	154
Allen	14,139	14,391	17,937	1,742	2.757	3,854	1,662	1.216	532	1,241
Ashland	3,317	3,582	2,037	3,758	2,793	3.640	3,222	4.274	8.647	3,822
Ashtabula	1,283	764	953	720	962	1,637	1,489	1,538	1,807	1,840
Athens	....	....	....	....	....	....	....	6	....	....
Auglaize	3,527	6,517	8,227	2,919	3,304	6,590	21,324	31,718	36,478	23,972
Belmont	431	509	472	542	1,381	1,429	1,547	1,962	1,484	1,047
Brown	2	72	36	26	....	....	40	....	....	....
Butler	56,519	33,399	8,680	25,665	20,695	62,521	56,395	153,324	119,361	99,333
Carroll	....	51	286	141	36	55	76	120	124	50
Champaign	1,394	5,859	10,153	3,841	1,345	640	430	824	1.756	30
Clark	2,121	2,672	2,868	2,399	141	569	1,247	6.535	8,205	5,617
Clermont	....	20	....	394	140	8	....	219	36	100
Clinton	3,155	1,910	681	1,390	585	1,110	333	1,012	2,831	447
Columbiana	255	242	420	455	700	503	345	335	367	432
Coshocton	453	1,437	884	562	279	15	125	14	18	21
Crawford	3,344	3,261	2,434	2,443	5,179	4.668	5,827	3,689	6,319	2,543
Cuyahoga	658	297	1,198	40	530	194	51	....	497	428
Darke	5.320	11,936	21.780	7.521	14,860	13,473	32,068	31,212	50,109	16,046
Defiance	83,678	48.737	43.279	42,213	27,287	21,679	18,594	17,928	15,718	9.507
Delaware	292	1,502	1.106	1.240	....	200	25	....	....	75
Erie	10,674	11,549	9.878	7,768	16,019	18,392	13,394	19,116	28,783	22,948
Fairfield	1,650	1,534	1.069	1.227	460	895	2,144	1,323	1,872	145
Fayette	1,045	7,903	2.785	1,969	172	466	....	206	300	300
Franklin	167	1,067	1,008	71	....	1,000	32	24	1,789	350
Fulton	32,189	14.146	34,263	29,563	12,432	6,962	5,118	9,096	3.193	2,997
Gallia	....	25	7	....	10	3	....	....	....	....
Geauga	758	850	892	567	237	198	63	174	159	....
Greene	1,203	1,236	2,219	772	395	2,254	225	6,158	7,378	4,981
Guernsey	225	32	15	230	270	829	1.063	41	337	112
Hamilton	6,167	3,331	1,856	2,627	4.251	14,597	7,056	32.062	80 933	109,582
Hancock	16,385	34,969	43,814	12,156	5,768	4.032	4,933	4.565	2,400	432
Hardin	5,254	7,896	2,829	463	250	336	....	50	122	72
Harrison	....	47	724	1,066	1.204	1,170	460	260	159	83
Henry	127,350	65,137	95,467	91,119	42,163	40,834	20,785	13,096	7,468	3,709
Highland	1,241	823	440	360	....	26	464	1,190	894	223

Hocking	....	113	....	....	10	....	97	....	308	180
Holmes	887	1,499	890	342	638	1,161	736	829	1,689	915
Huron	3,946	5,731	2,563	4,055	9,973	8,828	4,933	5,552	10,597	5,362
Jackson	....	18	....	....	5	....	....	4	....	....
Jefferson	527	516	652	1,137	1,142	1,623	1,817	141	1,184	882
Knox	540	220	935	1,583	530	84	211	1,462	449	151
Lake	632	1,613	3,610	1,148	814	417	690	2,728	2,950	949
Lawrence	140	....	....	....	....	....	48	....	....	....
Licking	800	3,055	412	116	245	684	....	109	3,490	369
Logan	4,731	8,237	3,777	1,127	855	2,215	1,811	2,321	8,521	1,777
Lorain	1,641	1,911	1,640	2,246	2,303	742	518	1,216	2,810	5,101
Lucas	19,135	10,100	10,735	14,985	10,965	8,544	8,461	6,968	6,043	5,665
Madison	1,727	8,914	10,746	567	250	305	60	389	1,600	1,387
Mahoning	473	110	182	193	540	49	230	93	417	792
Marion	533	648	1,300	197	859	92	460	578	1,045	....
Medina	1,447	2,064	5,745	4,100	2,372	1,098	57	200	22	132
Meigs	60	28	19	12	....	628	1,000	862	1,274	1,295
Mercer	37,330	38,204	25,180	10,337	6,350	5,463	26,828	41,492	39,343	20,486
Miami	420	2,573	6,102	2,277	3,346	4,119	12,296	13,661	21,575	12,299
Monroe	93	20	67	7	....	....	....	....	10	....
Montgomery	3,120	4,722	581	3,741	2,987	9,460	14,026	30,299	33,480	19,980
Morgan	30	24	....	85	65	2	41	61	151	98
Morrow	576	101	121	35	....	....	84	464	181	262
Muskingum	623	1,052	333	83	200	225	1,459	1.467	3,209	1,108
Noble	....	121	....	4	....	100	50	425	60	....
Ottawa	57,332	55,881	31,845	30,756	48,883	52,938	61.266	47,118	27,782	20,204
Paulding	91,805	241,388	220,761	135,305	74,924	32,166	6,611	2,546	862	569
Perry	450	200	....	135	25	....	80	87	251	164
Pickaway	253	1,840	5,262	125	....	1,200	....	1,300	627	....
Pike	....	101	2,100	50	....	660	....	....	192	172
Portage	157	68	390	35	320	....	156	1,621	609	45
Preble	1,840	1,963	860	1,235	1,785	2,046	8,087	12,878	23,155	9,038
Putnam	92,542	75,374	115,796	38,733	33,158	29.547	9,386	6,668	5.604	989
Richland	4,976	4,720	3,469	3,831	5,088	5,873	7,412	10,332	18.907	10.933
Ross	1,190	2,210	591	20	....	400	15	3,961	3,491	211
Sandusky	9,257	7,783	12,175	2,982	5,246	5,425	4,566	7,244	9.064	3,418
Scioto	....	93	....	42	320	1,105	500	1.249	195	....
Seneca	4,724	13,015	31,047	3,789	2.285	780	151	3.352	1.061	1,491
Shelby	1,374	2,401	2,532	2,970	4,302	8,001	33,949	60.875	42,373	19,917
Stark	351	1,582	1,475	728	1,429	806	899	1,897	1,657	1,064
Summit	781	321	293	206	1,008	776	450	415	491	105
Trumbull	432	50	296	36	....	75	16	214	175	300
Tuscarawas	100	70	343	92	362	1,162	51	56	182	....
Union	1,181	8,878	9,706	577	234	118	....	26	3	....
Van Wert	241,963	210,156	194,011	76,855	32,271	41,948	10,410	9,143	7,110	3,281
Vinton	....	....	11	....	....	250	....	....	....	....
Warren	17,287	12,456	7,822	8,126	9,830	12,217	9,934	30,365	16,896	1,192
Washington	25	....	....	5	28	....	301	....	....	....

COMPARATIVE TABLE SHOWING PRODUCTION OF BARLEY IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Bushels. (Includes Fall and Spring Barley.)									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Wayne	1,651	1,641	3,232	1,115	1,615	3,015	639	1,116	934	398
Williams	42,679	143,919	55.597	68.935	43.512	14.547	10.164	6,297	3,483	2,347
Wood	114,428	169,092	126,214	78,639	62,237	42,991	21,091	12,622	18,404	14,936
Wyandot	960	2.059	2,099	955	388	516	....	370	610	....
Total product	1,351,345	1,336,128	1,224,198	752,633	539,812	519,305	462,839	676,383	715,570	490,986
Total area	45,776	54,428	41,939	26,684	20,254	21,008	32,563	43,313	32,179	15,581

Average area for 10 years, 33,372 acres.
Average product for 10 years, 805,921 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF RYE IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	6,551	10,305	2,118	808	2,649	6,914	2,410	2,381	1,851	1,772
Allen	9,031	18,065	3,078	2,364	2,562	3,635	6,242	7,275	8,415	8,853
Ashland	8,961	10,916	2,964	1,353	2,935	13,216½	4,951	3,270	2,865	2,412
Ashtabula	21,123	23,362	5,411	4,985	6,671	8,288	6,214	10,454	12,018	7,964
Athens	1,042	933	451	440	....	1,835	2,606	1,167	134	242
Auglaize	6,306	27,524	3,038	1,731	3,600	5,629	4,709	4,739	7,711	4,741
Belmont	2,652	2,201	1,025	854	1,529	9,206	17,825	5,756	3,822	1,756
Brown	15,377	19,406	4,910	1,838	4,501	12,668	4,432	8,346	4,994	3,734
Butler	5,861	8,918	2,380	472	886	6,298	1,800	2,212	3,347	1,254
Carroll	1,816	2,949	803	528	2,277	6,454	3,074	2,034	1,834	1,256
Champaign	10,768	32,456	8,184	1,630	2,018	4,463	1,815	2,881	5,771	4,111
Clark	7,979	23,003	11,157	5,239	2,174	9,406	11,732	13,623	16,788	16,145
Clermont	19,916	35,940	12,626	6,589	9,462	10,649	4,011	13,968	10,816	7,190
Clinton	10,098	11,235	3,081	1,771	3,852	8,403	2,269	1,847	2,193	1,174
Columbiana	3,832	5,318	2,368	1,249	2,502	7,634	3,648	3,372	3,778	2,699
Coshocton	9,857	13,941	2,333	1,710	5,562	26,262	11,619	8,606	4,935	2,053
Crawford	4,515	2,137	379	473	1,519	3,784	1,235	5,579	5,697	4,849
Cuyahoga	14,557	25,166	8,790	5,658	9,265	15,982	9,038	12,520	22,729	15,606
Darke	7,160	36,384	6,568	4,470	8,735	16,759	15,950	10,198	16,612	8,092
Defiance	3.285	17,954	5,299	1,546	2,221	3,226	6,183	11,584	6,986	3,875
Delaware	12,293	8,403	2,236	1,067	2,343	3,273	1,880	2,295	2,986	1,825
Erie	10,424	20,771	6,804	2,260	3,883	13,591	12,477	12,656	10,682	6,447
Fairfield	12,433	33,708	4,401	1,789	3,853	15,157	7,189	4,061	3,203	1,618
Fayette	3,148	21,142	1,448	1,391	1,342	11,725	5,466	7,154	5,255	2,246
Franklin	18,146	32,171	7,055	2,783	3,581	21,017	4,271	3,658	3,169	1,289
Fulton	15,901	17,651	1,721	2,694	6,498	10,546	16,193	15,973	10,702	12,577
Gallia	1,747	760	519	238	1,024	2,121	1,403	1,446	491	367
Geauga	5,482	4,848	456	278	1,829	5,335	2,415	1,487	1,830	1,089
Greene	10,435	11,803	2,870	1,790	1,289	8,228	4,091	7,242	9,254	4,396
Guernsey	4,132	14,161	2,154	639	1,551	6,524	4,073	1,801	2,114	1,185
Hamilton	12,824	22,221	12.829	7,743	12,000	17,581	3,460	12,753	13,162	12,974
Hancock	10,953	48,919	6,980	3,044	3,887	6,529	6,173	17,601	17,067	15.406

COMPARATIVE TABLE SHOWING PRODUCTION OF RYE IN OHIO FOR TEN YEARS.—Concluded.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Hardin	22,136	15,936	9,247	1,853	3,642	3,527	2.825	3,087	8,477	11,414
Harrison	981	1,875	557	291	559	1,414	1.501	1,403	892	133
Henry	62,212	109,447	79,586	23.478	43,195	58,383	67.203	74,818	111.350	69,865
Highland	16,280	29,452	2.935	1,108	3,702	19,533	4,778	5.362	3,879	3,432
Hocking	3,606	10,173	1,512	302	1.840	2,157	1.740	1,097	1.314	915
Holmes	8,058	8.718	2,358	1.130	7,042	17,048	6,322	7,495	7.500	4,170
Huron	4,527	23,082	2.077	1,656	2,851	8,907	3,697	6,816	5.587	4,654
Jackson	1,029	1,456	710	192	146	802	1,036	384	100	40
Jefferson	1,529	2,386	659	199	410	2,731	4,814	1,521	741	692
Knox	19,264	12,516	1,643	874	5,032	20.500	7.931	5,467	3.019	2.260
Lake	13,373	18,061	7,951	6,204	5,073	10,830	12,884	12,658	17.833	8,909
Lawrence	147	448	319	70	264	454	615	934	782	603
Licking	44,201	34,956	5,262	4,159	12.721	37.155	22.547	9,617	5.394	2.144
Logan	20,789	24,548	4,270	2,109	4,267	7,037	5.015	5,287	8.614	4,357
Lorain	2,845	9,795	1,146	391	1.245	7,570	5.179	4,329	4,529	2.561
Lucas	20,835	30.349	15.453	5,122	11,029	22,263	24.206	37,140	28.777	24.613
Madison	15,168	32,421	3.890	1,206	355	7,725	3.008	4,765	7.666	3.529
Mahoning	4,351	8,139	1,577	1,134	2,959	12.813	2.646	1.683	4.232	5,415
Marion	8,634	2,302	819	676	1,770	2,951	1,288	3.092	4,267	3,636
Medina	18,799	24,654	3,857	3,415	5,084	21,939	6.383	4,276	4,133	2,120
Meigs	2,215	2,256	940	449	1.003	2,420	1.876	778	357	450
Mercer	4,046	29,626	2,436	4,038	6,050	9,263	16.239	12.035	20.885	8,587
Miami	1,551	17,185	3,253	1.142	1,995	7,623	9.198	5.046	4.524	2,776
Monroe	5,719	4.616	2,207	2,020	3.284	11,289	13,562	4.073	2,696	1,937
Montgomery	9,968	10,972	996	404	1,785	5.470	5.062	3.504	4.700	4,139
Morgan	1,406	4,868	354	199	349	2.163	5.232	2,929	2.016	780
Morrow	22,222	6,810	1,847	1,866	3,287	9.990	4,998	7,819	6.551	9,622
Muskingum	12,960	19,244	4,469	1,595	3,436	12,737	15.952	6.280	4.816	4,017
Noble	1,361	1,465	510	310	342	3,109	4,830	2,171	871	818
Ottawa	9,474	27,273	6.269	1.743	4,347	10,449	9.734	22.332	14.014	11.647
Paulding	30,001	55,719	28,642	4,208	9,060	6,633	8,802	12,905	8.897	6.943
Perry	5,454	14,530	1,010	505	907	4,482	5,701	2,220	1,993	1,933

Pickaway	7,156	20,205	5,342	191	1,178	14,263	3,216	4,163	2,106	780
Pike	3,620	4,976	1,265	337	1,410	2,246	968	511	522	67
Portage	8,763	8,065	2,032	1,147	4,020	14,599	5,328	3,997	8,708	1,927
Preble	2,104	15,525	1,446	1,074	1,644	5,793	5,216	3,112	795	4,900
Putnam	33,324	62,281	12,176	4,722	5,371	8,633	11,088	24,673	22,751	24,415
Richland	11,945	10,137	3,918	2,783	6,138	17,553	7,031	10,231	12,109	9,026
Ross	5,916	9,687	1,936	843	3,286	11,730	6,695	4,341	4,779	1,170
Sandusky	13,095	31,449	4,959	2,145	2,762	10,074	8,805	12,086	13,098	10,527
Scioto	1,052	601	138	139	716	792	652	941	1,371	36
Seneca	4,840	16,466	2,644	811	1,700	3,928	1,061	4,796	3,430	5,072
Shelby	5,704	45,400	8,063	3,925	4,205	5,736	5,727	10,254	10,727	3,530
Stark	6,009	6,193	3.560	822	3,337	12,751	3,944	4,144	4,671	1,997
Summit	6,546	7,169	1,536	1,508	3,406	7,346	4,571	3,178	4,958	1,923
Trumbull	5,855	6,239	1,851	1,290	3,670	10,370	3,018	5,255	4,532	1.756
Tuscarawas	9,811	16,673	2,337	1,027	3,218	11,958	5,005	5,130	3,967	1,975
Union	15,385	9,692	1,659	1,599	1,742	4,853	1,470	1,261	3,768	3,709
Van Wert	23,085	56,521	17,262	3,982	6,851	7,663	20,510	23,152	38,055	24,522
Vinton	2.103	2,047	567	164	446	820	1,319	676	149	137
Warren	12,522	20,765	5,462	2,373	2,070	11,877	1,665	4,295	3,423	325
Washington	1,453	1.891	1,290	494	1,881	5.406	13,763	5,252	3,126	1.551
Wayne	11,221	9,979	3,274	688	1,822	9,793	1,785	3,688	5,119	1,400
Williams	3,199	13,746	2,643	3,298	3,444	7,219	9,376	14,838	7,926	4,339
Wood	15.277	62,579	12,018	3,524	5,801	11,070	15,124	24,651	25,389	35,184
Wyandot	3,872	8,266	2,179	1,352	2,609	4,942	2,545	3,970	5,207	3,329
Total product	987,553	1,606,493	435,254	185,710	339,757	855,120	617,544	671,807	710,303	508,905
Total area	73,066	129,414	34,262	15,359	28,737	65,684	99,639	72,429	48,223	43,244

Average area for ten years, 61,005 acres.
Average product for ten years, 691,844 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF OATS IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	94,721	84,665	37,684	17,929	21,438	43,329	77,689	38,975	38,209	43,365
Allen	432,052	397,914	584,091	251,511	281,999	349,308	401,856	311,852	382,106	273,388
Ashland	771,266	600,159	627,475	659,558	587,134	609,853	571,221	544,881	598,441	462,819
Ashtabula	872,233	692,341	866,934	794,959	653,504	618,906	870,931	968,118	658,968	432,824
Athens	38,504	34,477	27,310	14,862	26,205	32,725	58,611	31,493	42,979	31,567
Auglaize	666,275	538,610	847.811	350,996	367,136	436,821	509,627	413,973	404,383	305,686
Belmont	254,552	192,815	201,014	17,338	133,704	183,874	228,195	144,951	228,454	246,583
Brown	227,823	176,719	131,018	107,276	69,462	107,478	117,588	118,490	130,405	114,575
Butler	378,654	231,571	432,839	110,330	119,349	234,489	584,500	399,513	293,559	243,972
Carroll	371,666	323,903	470,137	441,821	364,044	375,584	403,262	357,465	370,675	344,890
Champaign	747,141	357,408	788,270	165,204	262,664	278,744	389,235	303,857	258,400	162,719
Clark	433,413	243,432	447,183	135,621	159,362	190,345	224,295	212,029	198,065	154,270
Clermont	322,620	209,864	197,330	128,181	119,974	117,593	157,480	190,189	183,642	146,753
Clinton	356,059	162,546	232,554	49,114	53,357	99,373	183,517	100,621	128,794	88,852
Columbiana	654,120	477,506	741,394	693,071	599,204	603,300	651,654	639,332	599,833	521,166
Coshocton	299,789	276,456	290,434	251,767	214,135	192,631	285,635	231,328	270,444	294,642
Crawford	1,076,557	799,150	876,416	819,421	809,864	703,046	769,408	1,002,133	752,136	626,156
Cuyahoga	631,881	531,592	584,538	642,896	573,862	459,889	560,811	633,754	566,499	361,944
Darke	916,847	658,932	154,970	470,379	567,625	628,447	690,847	607,100	608,590	513,673
Defiance	1,002,549	637,344	746,344	957,135	630,863	468,003	417,897	543,670	558,774	378,601
Delaware	496,053	320,897	314,030	344,521	356,958	320,801	522,712	377,566	283,946	219,903
Erie	501,151	479,250	564,030	473,071	464,848	463,806	418,318	451,054	427,375	391,240
Fairfield	216,661	186,790	244,771	85,406	77,676	78,083	227,403	104,263	124,496	91,768
Fayette	171,756	124,904	193,449	17,685	30,060	46,186	156,590	45,668	52,841	36,946
Franklin	545,233	347,498	439,224	226,929	265,306	306,703	462,816	217,992	207,111	155,916
Fulton	1,121,673	778,510	981,196	1,131,937	770,624	563,658	632,212	804,581	627,960	563,084
Gallia	48,793	34,583	24,997	13,971	23,854	51,727	41,292	23,279	40,669	47,151
Geauga	544,777	419,073	530,673	528,497	451,831	423,622	526,633	446,775	439,415	283,941
Greene	295,258	174,826	322,131	76,022	107,115	139,219	282,940	193,468	173,284	130,808
Guernsey	156,327	158,590	140,289	143,807	132,193	137,928	174,673	116,344	182,915	192,955
Hamilton	164,841	73,784	105,361	46,943	45,988	79,636	194,096	147,535	105,828	94,023
Hancock	600,466	459,071	652,224	376,222	370,191	352,392	445,754	493,191	472,052	307,128
Hardin	525,958	565,940	512,362	271,438	309,389	329,230	492,936	417,137	370,528	262,035
Harrison	215,798	189,509	183,646	189,021	165,262	170,958	195,070	135,440	194,500	172,709
Henry	897,276	458,309	662,557	948,238	416,538	352,776	403,213	417,420	356,011	279,991
Highland	156,285	108,162	64,149	21,211	14,254	36,029	86,294	43,017	58,899	50,353
Hocking	66,734	44,254	24,744	17,533	18,303	24,507	58,315	23,915	35,029	31,171

Holmes	619,259	508,332	587,906	571,119	416,464	464,954	510,123	507,230	515,572	438,114
Huron	1,125,441	869,506	1,150,706	947,383	937,284	818,368	875,667	989,998	992,621	683,970
Jackson	30,589	21,950	12,230	4,952	8,053	20,342	40,613	20,717	33,196	22,731
Jefferson	351,516	252,292	338,928	356,377	279,982	300,346	307,222	223,884	293,466	311,718
Knox	382,102	346,639	235,810	331,068	309,216	331,494	379,608	337,956	351,141	320,495
Lake	270,930	236,758	281,204	253,776	214,113	282,175	239,411	294,598	267,447	232,121
Lawrence	42,477	43,720	43,196	27,183	34,878	50,858	43,048	38,070	42,880	53,966
Licking	431,197	296,421	257,580	255,039	312,913	348,096	673,217	303,111	294,847	231,528
Logan	535,263	310,092	643,000	176,908	231,957	288,160	401,431	188,975	331,508	170,032
Lorain	878,062	731,616	854,758	806,837	807,259	675,658	903,089	813,945	721,001	469,554
Lucas	582,973	449,543	524,945	641,083	466,114	405,204	393,298	447,597	393,938	293,292
Madison	819,462	431,119	494,663	191,784	148,780	202,909	214,235	166,287	127,429	94,091
Mahoning	602,902	416,711	728,821	589,750	507,861	542,087	292,377	565,506	488,695	460,094
Marion	916,469	567,606	784,047	496,708	588,409	404,892	636,250	528,323	511,523	361,590
Medina	976,539	766,274	867,890	833,985	804,636	777,848	760,348	715,888	742,772	441,735
Meigs	54,241	41,963	36,015	20,364	46,732	54,595	69,601	30,043	52,232	47,656
Mercer	966,559	747,896	1,330,342	580,336	629,134	605,476	703,071	664,059	651,413	480,016
Miami	881,127	525,294	954,128	369,129	441,606	522,361	553,379	468,301	415,013	408,432
Monroe	163,794	129,511	129,334	111,545	102,733	122,154	141,484	84,837	145,595	135,190
Montgomery	520,869	380,074	548,282	247,374	313,473	345,303	463,801	409.472	367,533	320,096
Morgan	70,789	56,807	53,987	37,230	42,942	44,898	77,174	75,885	79,523	74,088
Morrow	731,101	537,373	508,643	577,876	541,713	440.993	540,871	484,332	497,614	362,417
Muskingum	198,887	172,408	153,423	112,326	95,445	117,933	202,956	133,479	191.596	183,778
Noble	83,075	69,966	62,481	49,463	59,972	74,511	101,641	79,965	102,586	80,838
Ottawa	411,975	372,055	338,945	123,448	278,361	287,828	310,856	369,847	285,422	172,195
Paulding	970,446	437,028	593,142	882,971	421,621	290,712	263,481	330,957	233,769	170,769
Perry	86,554	66,430	46,010	20,190	24,595	34,665	68,025	45,220	52,193	33,162
Pickaway	89,703	68,674	141,386	15,111	18,707	38,522	155,121	41,041	42,739	32,074
Pike	63,303	47,613	20,672	6,503	8,641	32,709	47,597	21,904	38,182	24,210
Portage	876,080	603,477	679,305	759,979	683,584	702,875	810,075	628,989	616,094	431,411
Preble	341,292	324,380	718,039	181,531	228,781	318,380	369,609	407,764	370,625	384,498
Putnam	523,505	268,748	575,788	241,478	203,548	218,534	218,941	282,320	277,034	132,630
Richland	957,873	815,646	789,618	833,789	797,594	787,202	759,198	878,506	855,471	665,400
Ross	66,054	47,381	35,242	7,708	15,571	24,821	121,517	41,976	74,183	48,081
Sandusky	813,543	696,100	1,098,097	589,622	568,947	568,987	580,198	694,488	585,184	397,177
Scioto	81,110	72,895	59,020	30,801	38,621	65,546	98,342	59,984	85,268	66,625
Seneca	908,007	711,928	1,013,149	624,614	713,074	592,493	778,999	714,182	730,228	550,909
Shelby	1,096,416	771,842	1.460.241	500.374	638.128	565.007	621.071	589.958	586.274	407.075
Stark	1,377,799	940,832	1,179,203	1,121,658	975,546	1,100,271	1,137,122	1,263.340	966.968	779.889
Summit	743.263	603,028	668,969	716,708	716,302	701,253	759,733	722,404	636,985	450,800
Trumbull	846,837	666,050	896,327	748,819	709,482	754,977	940,600	930,538	573,461	423.809
Tuscarawas	572,315	459,194	602,907	568,044	463,146	462,495	554,621	541,737	542,650	452,546
Union	540,240	338,309	349,126	229,269	295,708	331,050	503,789	254,670	272.063	161.122
Van Wert	719,871	326.147	644,458	532,503	393,048	429,662	334,965	517,944	718.065	298,318
Vinton	44,130	31,502	19,433	9,477	16,559	22,548	40,745	23,460	32,483	25,558
Warren	382,793	245,340	275,215	20,397	135,028	190,654	399,821	203,010	208,620	196,928
Washington	162,785	136,851	145,956	115,701	146,224	154,905	208,637	110,668	180,966	156,040

COMPARATIVE TABLE SHOWING PRODUCTION OF OATS IN OHIO FOR TEN YEARS.—Concluded.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Wayne	1,327,916	1,010,425	1,082,945	1,128,861	926,081	1,029,760	1,030.683	1,015,500	950,125	696.523
Williams	1,166,895	786,419	951,218	933,170	820,227	664,182	578,117	727,717	715,623	640.301
Wood	1,507,749	1,174.448	1,486,936	1,404.129	1,101,267	1,039,803	825.611	1,324.520	1,054,242	727,387
Wyandot	602,003	446,181	494,332	369,141	379,102	300,578	510,549	446,320	387,570	275,341
Total product	46,789,843	33,936,143	43,193,577	33,296,912	30,694,432	30,563,033	36,027,464	34,013,739	31,991,896	24,537,989
Total area	1,188,947	1,053,876	1,231,248	969,565	976,902	1,052,605	1,262,906	1,095,142	1,051,773	856,235

Average area for ten years, 1,075,919 acres.
Average product for ten years, 34,504,502 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF CORN IN OHIO FOR TEN YEARS.

Counties.	Bushels (Shelled.)									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	906,846	598,677	908,020	902.171	1,013,713	937,766	1,156.639	646,711	850,644	641,597
Allen	1,528,880	1,006,162	1,901,497	1,257,240	1,209,899	1,357,388	1,538.141	1,314,789	1,246,444	970,477
Ashland	1,019,692	726,991	1,066.801	836,308	968.280	831,350	968.200	911.977	463,112	465,285
Ashtabula	249.949	641,577	586.148	454.599	690,001	448,283	558,988	618,204	711,620	130,104
Athens	493,755	282,080	434,728	449,755	515,325	477,430	515,263	498.507	421,385	420,829
Auglaize	1,994,731	1,237,374	2,454,749	1,574,265	1.554,545	1,403.978	2,012,775	1,347,947	1,259,745	1,049,422
Belmont	876,340	790,647	921.245	895,204	1,064.474	844,974	1,123,655	824,700	521.784	849.848
Brown	1,284,480	586,177	1,118,755	1,214,197	1,249,513	1,616,065	1,413,209	1,020,024	955,391	890,880
Butler	2,193,663	1,128,110	2,393,974	2,101,482	2 069,862	1,942,276	2,855 940	1,572,733	1,306 373	400,763
Carroll	459,200	496,543	566.289	391,093	580,806	439,523	612.753	496,521	271,203	393,892
Champaign	2,648,546	1,732,881	3,088.845	2,225,267	2,448,256	1 858,336	2,748,826	1,720,523	1,968,895	1,741,750
Clark	2,361,166	1,631,877	2,716,325	2,035,440	2,118,612	2,026,852	2,419,539	1,621,740	1,703.073	1,691.658
Clermont	1,054,348	542,678	1,161,680	1,111,813	1,042.754	1,000.661	1,094,808	1,189.538	636,340	645,318
Clinton	2,692,420	1,645,316	3,275.073	2,555,251	2,453.512	2,280,104	2,902,243	2,270.012	2,092,341	1,494,252
Columbiana	630,013	633,730	729.665	601,318	800,515	536,015	797.793	805,417	427,170	553,034
Coshocton	983,068	780,966	933.213	773,188	1,119,201	790,637	1.026,726	1.047,137	614.108	754.924
Crawford	1,428,498	1,133,960	1,529.246	1,345,669	151,134	1,106.100	1,375,642	1,514.750	1,083.403	887,158
Cuyahoga	229,458	351,938	429.792	373.963	468,740	329,851	322.106	402,182	277,535	243,684
Darke	4,192,821	2,744,410	5,099,152	3.208,023	3,424,966	3,102.697	4,238,209	2,609,091	2,312,433	1,951,414
Defiance	1,199,386	785,227	1,217.657	1.619,358	1,052,589	916,558	1,235,429	817,674	801,304	710,529
Delaware	1,718,267	966,755	1,616.187	1,540.143	1,522,213	1,449.185	1,757,653	1,056,614	1,243,620	957,356
Erie	548,596	514,501	730,722	649,002	691,450	572.969	708,363	566,006	684,943	452.103
Fairfield	2,041,560	2,279,694	2.105.011	2,199,100	2,012,881	1.688,568	2,241,576	1,679.819	1,885,645	1,822,385
Fayette	2,561,635	2,024,855	3.172,320	2.515,635	2.296,045	2.570.879	2,937,730	1,819,871	1.954,960	1,929,405
Franklin	2,848,567	1,338.557	2.891.623	2.305,290	2.332,185	2.523,647	3,254,039	2,280,794	2,261.157	2,045,502
Fulton	1,207,670	1,227,055	1,435.998	1,254,455	1,308,561	920,257	1,230,188	946,941	770,799	833,472
Gallia	579,839	336,602	557,231	640,882	675.596	616,806	681,697	519.875	470,702	501,052
Geauga	200,538	334,807	390.329	328,128	417.657	830,419	857,722	319,214	252,811	194,690
Greene	2,736,452	1,775,441	2,756,056	2,754,575	2,583,818	2,330,046	3,535,217	2,173.452	2,155,070	797,278
Guernsey	553,114	663,010	543.774	606.624	828.388	600,491	780.770	685.910	521,725	567,740
Hamilton	776,821	403,885	711,558	551,100	642,984	725,646	868,968	553,061	348.343	525,954
Hancock	2,463,238	1,728,507	2.531,303	2.201,211	1,891,306	1,736.131	2,288,577	2,270,751	1,712,219	1,461,092
Hardin	2,048,464	1,420,324	2.138.105	1,565.667	1,440.005	1,368,508	2,055,035	1,274.403	1,287,701	828,292
Harrison	511,120	480,768	505.580	419,352	646,208	467,615	626,528	566,971	327,067	422,243

COMPARATIVE TABLE SHOWING PRODUCTION OF CORN IN OHIO FOR TEN YEARS—Concluded.

Counties.	Bushels (Shelled.)									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Henry	2,212,583	1,898,418	2,685,462	2,994,496	2,217,175	2,038,971	2,398,694	1,964,750	1,809,368	1,423,826
Highland	2,016,476	1,214,651	1,793,370	1,763,498	1,661,306	1,691.519	2,132,133	1,427,075	1,325,736	127,896
Hocking	418,146	307,210	469,461	480,428	519,824	445,936	520,207	417,142	421,497	362,892
Holmes	906,335	776,845	901,928	663,754	860,545	705,329	852,011	696,069	437,789	482,660
Huron	1,034,361	1,012,855	1,346,616	1,266,748	1,223,828	894,766	1,080,982	1,061,286	706,037	644,419
Jackson	333,670	311,456	317,238	287,640	432,326	347,106	432,923	278,399	349,220	211,874
Jefferson	467,079	426,500	469,437	469,059	638,230	475,869	649,499	535,160	258,869	414,223
Knox	1,178,641	1,133,055	1,105,868	1,055,860	1,399,337	1,034,932	1,420,425	1,108,078	718,143	823,830
Lake	126,553	225,459	277,266	238,540	246,321	250,227	227,714	285,149	178,749	144,311
Lawrence	381,178	334,518	426,642	367,082	466,115	444,250	426,023	370,443	355,724	359,335
Licking	1,958,426	1,526,575	1,736,046	1,981,628	2,167,822	1,619,161	601,094	1,651,757	1,536,529	1,619,845
Logan	2,193,723	1,223,351	2,421,850	1,753,369	1,713,214	1,646,952	2,030,260	1,237,751	1,476,866	936,449
Lorain	566,510	597,416	772,542	662,442	794,862	568,355	686,801	651,603	494,658	382,416
Lucas	842,660	814,483	1,014,390	916,422	950,242	696,837	880,480	699,385	582,761	543,112
Madison	3,258,880	2,324,405	3,633,960	2,824,597	2,871,614	2,922,451	3,916,307	2,312,326	3,368,050	2,745,469
Mahoning	416,683	451,832	682,243	547,222	644,468	426,137	2,434,464	476,950	388,234	398,668
Marion	2,016,466	1,229,197	2,209,384	1,794,112	1,825,765	1,451,218	2,080,057	1,834,453	1,666,897	1,222,733
Medina	719,753	718,489	896,151	692,320	830,656	677,588	817,701	687,115	471,318	451,808
Meigs	489,013	225,928	396,882	561,612	559,523	425,885	509,077	441,688	330,353	385,341
Mercer	2,036,252	1,356,306	2,468,881	1,686,532	1,566,649	1,416,796	1,989,803	1,533,879	1,472,242	964,663
Miami	2,742,883	1,761,650	2,888,779	2,063,832	2,112,438	1,907,044	2,705,212	1,440,979	1,502,462	1,594,468
Monroe	649,208	532,871	588,384	598,603	634,108	537,453	596,458	517,222	282,026	368,498
Montgomery	2,045,440	1,273,938	2,069,967	1,680,543	1,918,425	1,658,414	2,642,318	1,442,263	1,547,585	1,151,464
Morgan	590,292	467,950	596,658	627,117	589,811	578,362	662,452	592,187	400,671	574,347
Morrow	982,656	771,235	1,102,462	1,109,115	1,239,920	856,196	1,007,102	1,004,100	784,083	650,708
Muskingum	1,022,037	841,998	1,073,900	1,049,738	1,175,889	945,800	1,268,634	1,091,455	296,294	953,001
Noble	637,844	611,943	566,642	628,768	572,268	613,915	688,186	620,916	394,762	514,809
Ottawa	706,809	633,927	819,250	815,567	683,287	813,510	921,456	853,920	477,662	875,293
Paulding	2,361,586	1,162,070	1,925,835	2,477,194	1,673,118	1,110,984	1,581,195	1,473,627	874,654	861,361
Perry	617,362	473,038	651,005	662,910	668,205	623,430	1,246,476	587,840	484,232	480,328
Pickaway	3,157,955	2,288,445	3,431,553	2,949,668	2,300,028	2,615,699	4,020,015	2,641,930	2,793,610	2,817,572
Pike	785,848	848,649	796,391	623,679	830,235	737,540	1,030,174	590,062	932,635	476,750

Portage	388,212	497,464	595,627	445,843	646,067	448.948	637,373	563,746	417,983	417,922
Preble	2,502,491	1,537,250	2,793,717	2,116.052	2,020,943	1,884.200	2.616.078	1,673,061	1,712.613	1,212.531
Putnam	3,023,122	1,829,837	3,206,499	2,601,494	2,067,899	2,433,846	2,398.700	2,482.136	2,003,212	1,736.568
Richland	1,308,236	1,033,994	1,253.450	1,192,010	1,197,431	977.172	1,089.980	1.092.156	651,701	594.399
Ross	2,304,574	3,114,693	2,449,357	2.498,190	2,658.608	2,218.451	3,160,790	2.934,469	2.497.783	1,866.638
Sandusky	1,474,840	1,465,867	2,056,915	1.451,885	1,665.140	1,497,865	1,496,354	1.562.198	1,273 177	984,078
Scioto	855,810	640,529	558,771	774,136	826,133	715,199	644.455	716 036	838,800	529,879
Seneca	1,801,515	1,682,183	2.228.435	1,731,338	1,856.587	1,420 813	1.891,697	1.806,580	1,472 872	1,136,157
Shelby	2,297,897	1,397.200	2,783,137	1,636,396	1,714,186	1,332.986	2,206,410	1,288,781	1,542 529	915,715
Stark	1,309,470	1,102,941	1,325,034	1,076,804	1,378.993	1,125,004	1,434,023	1,425,923	724,204	766,205
Summit	571.458	651,123	743,137	580,650	809.622	614,926	791,030	728,837	453,925	466.096
Trumbull	303,725	544,999	593,774	462,275	593,526	614,520	640,269	603,299	432,568	358,074
Tuscarawas	781,360	721,376	842.961	627.542	898,526	684,775	864,204	891,503	506,476	583.792
Union	2,229,616	1,461,727	2,124,346	1.765,009	1.735,316	1,861.126	2,260.187	1.438.152	1,437,624	1,070,589
Van Wert	2,579,998	1,327,475	2,498,029	2,193,660	1,609,615	1,503,679	2,046,000	2,005,548	1,850,425	1,319,471
Vinton	266,123	234,336	327,684	276,072	343,121	300,466	364,855	315,840	309,097	230,309
Warren	1,636,491	1,165,074	1,998.030	1,934.531	1,859,266	1,745.400	3,749,484	1,544,712	1,085.442	1,382,692
Washington	727,312	484,950	724.457	722,987	799,270	759,702	701,817	661,374	412,611	588,376
Wayne	1.712,987	1,146,277	1,587,610	1,428,753	1.581,285	1,346.455	1,533,031	1,458.537	885,484	716,322
Williams	1,101,575	986,975	1,171 857	1,118,563	1.043.677	776,751	1.045,812	745,642	745,306	663,513
Wood	2,681,169	3,431,449	3,442,570	3,178,841	2,481,132	2,503.655	2,861,704	2,871.727	2.313,169	2,133.908
Wyandot	1,720,919	1,162,347	1,593,714	1,574,785	1,444,258	1,113,728	1,564,721	1,538,340	1,211,825	866,567
Total product	122,675,349	92,368,811	143,161,675	115,138,669	114,214,148	103,004,970	134,796,274	102,447,445	88,805,607	77,229,446
Total area	3,160,066	3,079,376	3,361.166	3,025,606	3,057,712	2,999,826	3,230,331	3,037,014	2,910,206	2,655,050

Average area for ten years, 3,051,641 acres.
Average product for ten years, 109,384,239 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS IN OHIO FOR TEN YEARS.

Counties.	Tons of Hay.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	11,134 9,741	14,221 17,155	12,124	10,767	12,169	9,486	9,155	9,343	11.889	11,277
Allen	9,174	17,155	22,709	20,394	26,105	21,497	22,519	11,830	27,339	23,629
Ashland	25,804	20,529	35,550	26,026	32.279	21.597	27.655	17,352	36,651	25,032
Ashtabula	64,312	64.755	55,452	57,306	56,763	60,451	47,646	39,327	63,848	72.294
Athens	16,332	22,759	21,333	17,576	22.122	17,941	13,149	7.010	21,760	23.818
Auglaize	7.490	13,157	15,121	14,891	16,979	16,442	16,117	9,803	19 146	17,497
Belmont	27.668	36.887	40,264	37,060	38,728	28,876	27,803	14,597	29,822	32,370
Brown	11,939	16,583	13,724	14,475	13.710	13,450	12,411	12,652	16.937	14,772
Butler	12,385	15.820	14,641	14,131	15,952	14,096	11,287	21,107	17,785	17.334
Carroll	28,049	35,787	31,184	28,668	29,316	22,602	23,305	12.547	31,634	30,077
Champaign	7,936	12,289	12,583	8 029	14,081	15,566	15,304	7,452	16,963	14.430
Clark	11,926	21,024	16,031	11.961	17.205	18,210	16,840	12,345	21,613	22.367
Clermont	13,433	16,811	16,576	15.535	17,214	14,145	11,332	18.107	25,330	3,538
Clinton	11,182	14,496	15,463	13,342	16,359	11,792	12,407	10,590	28,236	20,441
Columbiana	42,128	117,073	42,608	41.881	46.204	38,475	39,786	15,612	44,913	44,556
Coshocton	31,272	40,894	34,946	27,247	37.061	26,182	26,557	13,152	24,860	31,004
Crawford	21,036	19,814	29,806	31,651	34.516	31,545	30.891	20,732	35 508	28,142
Cuyahoga	35,883	38,673	26,719	29,264	36,317	34,363	31,979	23.149	40,123	43.134
Darke	8.248	12,763	16,296	14.152	19.123	19,420	17,323	9,264	16,464	14,215
Defiance	19,772	22,941	23,065	19,141	21.201	18,613	21,487	13,667	21,646	22,066
Delaware	33.309	42,287	23,883	27,562	38,424	35,558	33 590	33,422	55,716	51,316
Erie	8,386	9,288	11,783	12,301	14,449	11,532	12,919	9,634	15,482	15,196
Fairfield	24,097	40.943	29,509	22.554	29,368	17,466	24,092	16,008	30,837	29,298
Fayette	7,148	44,465	9,745	9,859	12,188	14,149	8,442	4,103	14,099	19,690
Franklin	25,071	12,880	28,419	27,882	31,100	30,987	29,686	20,002	41,234	42,160
Fulton	15,089	18,860	18,068	18,786	24,375	16,721	25,979	12.892	24,259	22,840
Gallia	9,302	11,522	12,336	11,380	12,848	13,312	8,985	7.516	12,224	13,304
Geauga	36,380	35,551	28,431	27,987	30.826	24,807	26,852	12,765	40,109	40,124
Greene	10,836	16,960	15,227	12,491	16,083	17,542	33,708	13,926	24,489	21,298
Guernsey	28,279	44,098	36,210	32,677	36.762	28,969	25,704	14,347	29,494	36,329
Hamilton	11,716	10,336	12,744	13,227	13,351	14,468	11,040	14,017	14,627	18,695

Hancock	12.099	22.951	28,655	31.597	33.407	29,540	36,044	25,047	41.533	35,119
Hardin	10,090	17,161	19,158	24,276	48,355	24,937	32,690	12,469	33,450	28,890
Harrison	30,947	36,817	33.208	34,741	30,569	28 295	26,225	12,945	33,287	33,614
Henry	15,431	17,585	16,538	16 339	15,874	12,077	17,182	10,577	16,854	15,174
Highland	15,355	23,777	18,363	20,724	21,280	15,542	14,799	14,278	26,964	19,073
Hocking	10,903	33,915	11,638	11,117	12,345	8,473	10,131	6,444	13,140	13,808
Holmes	23,056	29,813	28,469	19 237	27,125	20,827	19,911	14,668	27,686	24,619
Huron	27,458	28,502	31,113	34.863	40,775	33,353	30,932	26,574	51,278	40,131
Jackson	9,035	11,181	11,346	10,859	12,029	13,140	8,625	6,193	13,388	12,165
Jefferson	25,496	32,825	31,168	28,448	32,454	26,124	25,330	10.853	26,052	27,144
Knox	29,673	37,816	26.920	28.987	35,557	25,559	27,973	13,787	35,102	33 025
Lake	14,836	18,241	12,647	12.027	12.716	15,412	15,900	8,524	15.870	14.938
Lawrence	7,601	5,034	4,686	4,511	4,813	5,113	3,834	4,081	4,083	5,167
Licking	55.809	70,700	45,663	42,240	55,286	53,755	51.919	27,474	51,805	53.875
Logan	10,321	16,422	17,230	16 241	21,731	18 952	22,037	10,313	29,819	27,644
Lorain	47,155	42,217	41.010	44.487	49.466	37,790	36,527	33,482	79,180	53,727
Lucas	11,841	13,600	12,828	11 514	14,296	13,968	14.437	8,552	17,203	14.469
Madison	8,140	17,207	9,766	8,592	14,568	16 809	12,069	8,316	23,445	23.423
Mahoning	40,502	36,330	31,246	24.758	41,087	20,601	26,355	14.264	42 063	53.205
Marion	11,126	16,096	17,411	20.827	26,329	21,276	28,216	12.580	35,229	31,648
Medina	33,248	27,723	27,525	28 514	38.250	25,434	30,007	18,969	46,721	35.920
Meigs	13,476	17,147	15,847	10 242	16,659	14.717	10,720	5,338	16,837	18,894
Mercer	8,884	14,646	19,622	18.928	20,586	20,251	19,078	11,430	29 223	17,430
Miami	6,919	7,573	9,141	7.556	19,939	11,442	12,652	6,981	11,667	11,284
Monroe	16,937	28,182	29,126	31,154	26,592	18.950	12,724	9,201	22.438	23,136
Montgomery	10,425	17,651	13,859	14.435	16,307	15.132	13,257	12,625	18.141	16.307
Morgan	20.763	31.152	28,270	22 316	26.956	19,905	19,633	12.322	22 526	27.350
Morrow	23.606	29,538	21,759	26 962	41,133	31,227	29 591	18,626	49 217	39,499
Muskingum	37.703	53.174	46.013	34.990	44,901	32,823	35,747	18 242	35,262	43 958
Noble	22,276	30,508	26,821	21,708	26.720	23.465	16.370	12 326	23.149	25,881
Ottawa	14,824	16.062	12.817	14.697	16,387	11.232	11,107	10,006	16.026	16,884
Paulding	16,529	18,871	23.224	14.684	17,095	12 360½	12,104	7.345	16,141	16,542
Perry	19,557	31,061	24.870	18.210	22,950	17.460	18,788	12,289	22,870	21,396
Pickaway	6,814	17,357	12.635	9,983	12,640	10.807	15 033	8.702	12 192	12,668
Pike	4.463	6,074	5.215	5,306	5,054	3,615	3 378	4.417	7.796	5,705
Portage	39,029	36.363	27,044	33 559	32,971	21.124	21,999	11,275	38,177	43.880
Preble	4,875	7,899	7,601	7.581	9.917	10.509	7.482	8,347	10,699	11.592
Putnam	15,761	17,705	22.847	19,613	18,163	18 105	20 193	12 648	37,761	21.180
Richland	27,641	30,086	28.906	26.464	36.086	27,010	27 976	19,070	43.400	28,193
Ross	8,187	14,795	13.190	10.354	12.162	11.204	9 288	5.318	14.019	10,904
Sandusky	17,834	23,347	20.848	18.415	22.540	20.585	23,475	18.422	23,868	15,365
Scioto	9,125	9,886	8.891	9,649	9.046	9,310	8,592	6,872	11.272	15.443
Seneca	15,122	21,317	25,064	29,643	29.520	23 836	24 938	21,752	41,128	25.712
Shelby	6,750	9,602	11,298	10.392	14,995	11.252	15,116	7,692	16.178	13,039
Stark	52,701	55,101	42,472	51,927	56.360	45.563	50.630	25,341	60.165	45,824
Summit	32,178	33,080	25.377	29.509	31,020	26,815	24,144	10.848	32.613	28,245
Trumbull	61,764	60,832	55,462	61,407	61,081	43,870	35,496	24,715	62.081	71.980
Tuscarawas	54,750	49,832	47.264	55.817	46,155	35.961	37,129	23,590	44.626	43,014
Union	13,084	22,183	16.003	19.436	28,344	25,456	19.104	13 181	42,487	38,451
Van Wert	22.807	30,839	28,116	24 716	28,592	25,956	25.155	10.582	30,495	23,842
Vinton	9,049	11,012	10,271	8,751	11,099	11,513	7,636	4,478	12,081	13,966

COMPARATIVE TABLE SHOWING PRODUCTION OF MEADOWS IN OHIO FOR TEN YEARS—Concluded.

Counties.	Tons of Hay.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Warren	13,229	17,383	16.586	16,120	16,129	14,488	12.927	17.248	23.123	20,357
Washington	25.516	32,045	33.392	25,709	34,991	24,427	23,722	14.971	29.485	31,917
Wavne	42,571	49,134	41,313	41.649	47,541	32,591	37,849	16,858	56 252	42,143
Williams	30,178	25,230	20,518	28,843	30,958	28,586	34.187	21,769	27.981	22,325
Wood	24.950	28,272	23,588	23.121	33,997	28,847	30 465	18 758	33 647	30,514
Wyandot	15,180	16,926	20,583	23,731	26,922	26,371	29,925	14.080	30,041	23,028
Total product	1,844,892	2,339,399	2,034,980	1,972,659	2,323,978	1,903,963	1,925,389	1,236,315	2,544,248	2,336,794
Total area	1,658,397	1,960,476	2,072,781	1,776,075	2,001,111	1,661,038	1.941,274	2,037,931	2,239,212	2,002,716

Average area for ten years, 1,935,101 acres.
Average product for ten years, 2,046,261 tons.

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO FOR TEN YEARS.

Counties.	Tons of Hay.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	5,399	752	1,609	4.963	2.731	7.425	1,160	1.438	1,585	3.906
Allen	21,341	26,026	798	15.684	8.868	18.057	350	1.773	9.879	25.372
Ashland	21,039	38,940	10.692	16.998	13.340	32.459	9.795	6.002	10,488	21.891
Ashtabula	2,195	3,760	1,839	2.785	3,384	6.780	4,041	1,314	879	1.004
Athens	2,813	223	497	2.253	880	2.450	400	296	950	1.146
Auglaize	16,683	16,873	934	12,062	8.468	15.585	1.967	1,512	9,501	12.148
Belmont	5.142	413	960	6,372	1.899	12.919	2,073	694	1.958	3.145
Brown	6.356	778	1,941	1.432	1.041	2,351	653	719	792	2.552
Butler	15.740	12,342	10,382	12.847	9.859	17,278	2,057	5,629	9,104	13.796
Carroll	2,555	886	426	3,984	2,575	8,457	826	509	1.642	6.804
Champaign	18,297	16,957	942	20.244	13.762	24.238	1.813	5.068	14,494	16.252
Clark	14,783	12,557	1.662	12.211	10.553	21.675	2,337	5.622	10.297	16.467
Clermont	4.174	2,041	2.023	3.038	2.326	4.333	905	2,022	1,536	1,304
Clinton	8.253	6,073	4.385	8.415	5.249	18.334	3.251	4.109	3.307	5.118
Columbiana	7,737	7,439	4.543	8.931	2.163	14.857	3.337	3,326	8.534	11.829
Coshocton	8,791	3,089	1,773	8,791	3.122	10.478	2,727	809	1.773	5.071
Crawford	22,461	33,516	6.289	14,857	11,323	22,271	5.346	7.100	9.281	18.711
Cuyahoga	2.472	4,291	1.858	3.432	1.549	4.419	2,626	2,341	1.524	2.298
Darke	30,979	33,101	2.982	26.603	21.540	30.699	1,194	4,426	20.442	25,439
Defiance	19.079	23.334	12.688	5,191	8.747	23.093	1,333	6.472	6.980	12,706
Delaware	18,875	12,607	1,757	10,641	4,947	21,587	3.003	3,683	9,217	11,055
Erie	7,571	11,061	3,633	5,985	4,837	10.397	2,046	3.867	2,173	5.451
Fairfield	17,644	13,880	7.566	16,816	7.879	22,390	4,205	7,183	13.520	11,613
Fayette	6,438	5,215	2,115	4.069	2.409	10,305	894	2,722	3,658	2.073
Franklin	12,555	8,401	3,466	9,538	5,124	19,196	3,211	5,756	5,808	8,090
Fulton	21,345	20,536	13,462	2.444	9,374	18.917	2,681	7,182	7,630	13,176
Gallia	2,303	237	578	1,823	1.127	2.892	952	514	821	1.552
Geauga	2,739	4,408	2,704	2,792	2,710	9,155	2,735	645	1.143	2,255
Greene	13,503	11,366	6,742	9,450	6,731	18,796	1,995	6,621	9,212	11.256
Guernsey	2,442	829	618	3,788	1.202	5,024	672	342	645	1,537
Hamilton	6.096	6,006	4,476	4,923	5,578	5,088	1,048	3.161	4,087	6,256
Hancock	34.324	33.270	2.807	14.161	19,003	32,576	1,923	3.211	12.233	23,238
Hardin	20,554	21,154	945	12,864	10,249	21,494	334	1,291	6,745	14,264

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER IN OHIO FOR TEN YEARS—Concluded.

Counties.	Tons of Hay.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Harrison	1,685	393	645	2.648	2.682	5.878	1.219	315	573	2.098
Henry	15,233	14,558	9.884	2.697	9.331	17.744	1,935	6.326	3.201	9.931
Highland	7,623	3,015	3.238	5.372	3.071	13.825	883	1,811	3.022	5.361
Hocking	2,011	551	808	3.240	1.652	3.720	895	671	1.079	1.209
Holmes	1,038	9,200	4.115	10.093	4.179	15,490	12.084	3.946	4.369	13.275
Huron	22,549	37,265	13,131	15,607	10,359	26.941	7,175	7,878	4,769	11,912
Jackson	291	25	226	401	227	1.053	141	136	134	98
Jefferson	5,800	1,065	1.882	6.247	1.789	9.917	3.036	823	1.935	4.664
Knox	11,281	13,535	6.060	16,118	8,189	20.210	7,242	3.775	9,511	16.144
Lake	1,171	1,477	1,187	1.491	764	1.731	984	353	474	1.972
Lawrence	822	262	560	1.025	458	1.082	507	389	252	940
Licking	14,860	10,371	6.941	15.430	6.177	15.314	4,802	6.576	10.436	9.794
Logan	21,979	24,102	486	17,563	12.045	26,675	498	9,667	13,049	13.772
Lorain	10,598	16,911	7.286	6.984	3.856	14.396	4.689	4,343	2.753	5.294
Lucas	6,021	7,490	5.450	1.713	5.250	10,200	2,081	3,554	4,381	6,811
Madison	8,912	8,213	1.891	9,224	4.812	5.220	2.618	4,065	4.186	6.939
Mahoning	8.250	6.966	5.337	9.144	4.404	19,323	3.153	2.292	5.960	9.346
Marion	18.968	22,019	2.217	10,915	9.745	20.352	3,614	4.214	6.861	15.088
Medina	16,297	26,006	8,475	15.203	8.723	23,509	5,316	6,218	9.661	15.602
Meigs	3,237	356	892	2,181	1.067	3,555	595	363	1,765	2,314
Mercer	22,965	24,010	1.741	16,166	7.502	14,941	757	960	10.081	16,020
Miami	14,156	18,484	2,827	12,090	10,766	18.894	941	1,665	10,012	15,212
Monroe	1.663	142	203	3,559	634	6.285	279	64	459	472
Montgomery	14.411	13,631	4,932	14,978	12.192	22.432	2,041	4,194	9.959	20.678
Morgan	5,311	433	803	5.178	1.832	8,828	855	776	2.435	2,165
Morrow	24.695	25,483	4.586	13.825	6.063	21,713	8,205	8,343	7,746	9.950
Muskingum	7,838	1,787	1,846	6,696	2,712	9,283	2,617	1,050	2.590	2,120
Noble	3,039	301	287	2,140	1,081	5.352	285	384	1,099	1.314
Ottawa	10,639	13,641	5,308	2,643	5.601	13.286	2,186	3.017	527	4.501
Paulding	8,540	13,308	4,311	1,773	3.632	7.463	486	1,347	2.403	5.675
Perry	6.766	1,842	2.664	8,110	4,545	8,035	1,005	508	1.237	1.651
Pickaway	9,061	5,990	5.341	9.188	5.434	18.997	2.595	5.294	8.505	7,935
Pike	2,616	1,155	2,032	3.177	2.366	3.677	943	1,444	1.755	1,510
Portage	7,310	7,625	8.456	11.953	4.945	18.869	5.384	2,104	8,029	20,968
Preble	15,244	13,628	8,521	11,597	10.045	22,081	2,318	4.144	9,610	14.329
Putnam	19,201	22,962	2,115	6,697	13.955	19,852	955	2.654	7.412	12,096
Richland	19,239	28,122	8,576	19,387	13,068	34,156	12,199	9,499	10,140	20,488

Ross	8,022	2,822	3,922	7,649	4,793	11,076	2,135	3,558	5,932	5,273
Sandusky	14,255	19,473	7,582	10,064	10,877	21,271	6,562	7,517	7,973	16,285
Scioto	2,594	476	2,461	2,601	2,161	3,389	1,162	1,315	1,274	1,865
Seneca	35,139	41,593	10,960	20,941	21,565	38,937	8,438	7,473	11,799	28,525
Shelby	18,684	17,298	390	12,637	9,939	18,195	836	1.854	9.934	12,076
Stark	15,008	13,845	9,501	18,002	4.291	23,112	10,351	7,816	10,073	27,494
Summit	5,991	6,421	3,139	6,150	5,093	17,263	5,198	2,966	8.081	14,549
Trumbull	3,378	3,724	1,926	5,017	3,284	14.471	5.607	2.455	2,711	4,656
Tuscarawas	4,226	2,245	852	4,659	1,117	10,735	3,262	2.364	2.055	8,431
Union	23,326	25,790	698	13,979	5.075	19,541	1,763	3,115	6,205	11.794
Van Wert	18,465	19,600	3,900	6,722	8,881	13,215	585	860	6,865	13,309
Vinton	491	105	168	1.068	510	1,915	258	301	542	548
Warren	9,246	7,525	6,461	8,522	5,266	16,740	1,928	5,435	6,754	10,532
Washington	3,263	316	757	2.444	1.433	10,806	755	787	2.034	3.038
Wayne	21,405	23,939	13,592	21,305	15,416	41,009	17,941	11,188	12,758	33,169
Williams	19,588	28,827	19,685	4,744	10,550	21,358	3,588	7,463	8,151	16,445
Wood	17,070	20,979	9.877	7,463	8,382	19,424	3.277	6,289	5,562	12,657
Wyandot	23,457	27,771	5,725	20,418	13,686	17,888	2,185	4,150	8,679	16,349
Total product	1,026,948	1,051,464	361,980	749,225	552,021	1,336,599	252,507	299,377	506,589	865,333

Average product for ten years, 700,204 tons.

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER SEED IN OHIO FOR TEN YEARS.

Counties.	Bushels of Seed.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	7,805	82	966	3,768	793	10,004	1,585	1,729	1,020	3,498
Allen	7,831	12,824	200	4,930	1,045	18,999	361	629	6,320	14,135
Ashland	4,111	6,733	2,084	4,689	989	17.618¼	3,726	6,137	3,812	5,086
Ashtabula	138	416	38	77	41	2,268	285	60	11	117
Athens	174	....	....	191	21	191	35	31	93	201
Auglaize	14,560	7,673	370	7,296	1,340	13.702	255	1,143	3,264	8,913
Belmont	1,710	6	260	2,947	44	8,125	422	133	127	1,337
Brown	2,639	238	645	920	143	2,798	270	639	675	408
Butler	7,948	2,775	3,842	6,520	570	12,466	1,751	4,518	4,884	5,225
Carroll	1,318	151	66	773	993	6.038	624	643	275	2,501
Champaign	9,319	7,280	272	8,374	1,980	20,524	229	4,291	8,896	18,149
Clark	3,381	7,737	1,035	8,969	1,244	13,109	514	7,153	7,742	17,651
Clermont	1,371	214	219	890	39	1,578	179	578	95	....
Clinton	2,601	3,964	4,116	7,929	1,256	11,976	2,487	10,293	3,405	2.790
Columbiana	935	351	277	601	21	6,541	328	1,638	562	1.333
Coshocton	5.656	579	621	5,211	367	10,758	1,540	1,178	800	2,048
Crawford	6,031	13,000	2,144	5,105	1,958	20,605	3,459	15,820	7,304	7,678
Cuyahoga	21	305	3	112	15	1,344	58	60	11	15
Darke	18.783	14.504	930	17,105	4,788	27,478	700	5.236	7,938	14,462
Defiance	6,578	20.559	18,006	4,419	5,030	18.253	2,317	13,903	14,694	15,475
Delaware	4,941	3,800	417	2,428	220	8,133	678	3,200	5.620	4,886
Erie	1,461	2,528	811	1,434	506	9,414	1,488	3,227	1.069	2.024
Fairfield	11,544	6,410	7,507	17,068	1,211	19,902	1,289	12,844	20.573	20,040
Fayette	3.212	4,169	2,690	4,660	249	11,947	638	4,603	2,108	1.657
Franklin	4,310	4,001	2,507	7,845	419	16,952	602	8,078	6,003	8,713
Fulton	3,762	8,848	11,169	693	2,860	17,549	3,236	5,314	5,521	10,481
Gallia	279	16	101	224	122	817	372	84	145	278
Geauga	46	20	65	28	50	1,749	242	6	68	11
Greene	8,182	7,649	6,261	11,152	1,545	15,318	821	10,684	5,613	9,516
Guernsey	1,089	8	41	1,102	186	3,182	242	43	123	493
Hamilton	1,537	1,481	1.364	1,145	230	2,154	194	1,398	843	985
Hancock	11,887	18,733	2,127	4,489	3,584	27,923	2,526	2,986	14.890	15,729
Hardin	8,710	14,210	418	3,830	1,233	14,793	214	608	7,985	11,266

Harrison	804	87	217	1,270	2,627	5,829	716	143	169	1,022
Henry	7,711	12,830	10,794	2,161	4,831	20,098	2,663	8,588	10,484	11,714
Highland	10,308	1,609	3,592	6,753	545	18,006	1,548	5,174	3,094	3,679
Hocking	2,390	73	283	2,293	167	2,946	302	391	1,076	1,559
Holmes	5,612	3,171	1,520	5,806	1,112	12,337	6,177	5,832	1,875	4,121
Huron	4,049	12,333	4,781	3,586	1,910	22,836	3,076	9,986	1,298	4,990
Jackson	15	....	....	42	....	160	....	6	2	....
Jefferson	1,680	136	364	3,002	61	8,979	1,689	174	168	1,800
Knox	4,487	3,786	1,526	8,533	836	17,008	3,565	4,816	4,716	10,085
Lake	13	69	74	53	48	1,045	60	186	30	22
Lawrence	47	17	30	56	33	254	107	161	3	177
Licking	6,490	491	3,492	10,107	1,736	17,562	1,248	8,548	10,876	9,724
Logan	15,994	8,388	75	7,629	1,079	16,205	207	1,465	14,245	10,247
Lorain	798	2,591	579	494	197	6,741	638	1,083	387	822
Lucas	3,513	5,261	5,013	735	1,582	10,172	1,059	2,745	2,180	4,800
Madison	3,870	5,240	876	4,298	224	7,895	902	8,884	4,205	4,506
Mahoning	270	318	252	535	120	7,760	360	1,196	763	902
Marion	4,016	10,963	854	2,067	1,153	14,073	1,980	8,234	8,532	10,257
Medina	2,074	5,152	1,760	2,654	1,020	13,965	1,473	2,466	2,025	3,739
Meigs	313	77	37	183	37	444	36	48	106	111
Mercer	22,112	17,208	1,620	12,544	2,004	15,465	237	1,467	4,734	7,660
Miami	6,492	10,114	1,359	8,964	1,832	13,611	482	2,336	3,109	13,565
Monroe	1,170	24	42	1,911	82	5,574	33	7	76	172
Montgomery	6,022	6,572	1,310	767	1,547	16,286	888	3,589	4,605	10,737
Morgan	2,467	3	122	1,954	44	5,269	166	224	456	575
Morrow	3,218	7,956	1,263	1,666	561	17,085	2,350	13,370	8,737	6,830
Muskingum	3,989	80	387	2,677	114	6,170	587	427	853	822
Noble	1,534	15	32	740	44	2,451	28	152	128	188
Ottawa	1,160	4,081	2,786	683	840	8,748	1,635	1,502	191	830
Paulding	3,529	12,477	5,244	1,376	1,733	9,528½	513	2,047	2,606	8,234
Perry	5,430	819	1,785	6,110	980	9,933	967	1,326	2,117	1,624
Pickaway	7,570	4,401	6,991	12,256	1,025	15,320	1,579	7,735	12,957	13,361
Pike	3.303	137	1,476	2,265	300	3,590	588	1,278	2,078	1.594
Portage	677	833	257	1,844	176	10,644	945	478	561	2,027
Preble	7,747	3,560	3,147	6,640	1,255	14,593	1,307	6,076	6,814	8,438
Putnam	8,152	18,065	1,742	4,396	1,199	33,306	793	1,564	4,831	12,200
Richland	4,429	10,137	1,370	5,294	903	32,190	4,248	10,063	4,878	6,593
Ross	11,133	1,827	4,344	11,191	1,240	16,134	1,709	5,792	8,699	5,808
Sandusky	3,776	9,462	4,535	3,436	2,134	20,430	3,503	3,775	4,764	7,446
Scioto	1,152	82	264	738	334	1,691	565	700	324	373
Seneca	11,714	19,695	7,990	8,683	3,006	34,620	3,412	12,549	14,378	14,960
Shelby	17,545	9,181	96	6,342	1,377	17,033	288	1,588	5,312	6,678
Stark	2,517	1,821	839	3,553	153	12,609	1,866	6,084	1,202	1,645
Summit	635	932	149	597	121	7,440	655	721	525	1,377
Trumbull	101	60	39	229	38	4,408	511	64	34	178
Tuscarawas	3,084	504	297	2,534	76	9,105	1,654	3,547	776	3,980
Union	6,873	8,441	168	3,112	343	7,747	608	3,994	3.686	4.967
Van Wert	4,514	10,257	2,243	3,694	1,165	10,959	380	974	2,270	5,069
Vinton	361	8	258	330	9	552	19	212	335	238
Warren	3,512	1,141	1,128	4,952	277	9,560	896	5,981	1,191	2,153
Washington	1,849	....	60	721	44	6,597	171	308	439	623
Wayne	5,538	6,059	1,989	4,454	1,211	17,741	5,637	9,812	4,316	4,135

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER SEED IN OHIO FOR TEN YEARS.

Counties.	Bushels of Seed.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	7,805	82	966	3,768	793	10,004	1,585	1,729	1.020	3.498
Allen	7,831	12,824	200	4,930	1,045	18,999	361	629	6,320	14,135
Ashland	4,111	6,733	2,084	4,689	989	17,618¼	3,726	6,137	3,812	5,086
Ashtabula	138	416	38	77	41	2,268	285	60	11	117
Athens	174	....	....	191	21	191	35	31	93	201
Auglaize	14,560	7,673	370	7,296	1,340	13,702	255	1,143	3,264	8,913
Belmont	1,710	6	260	2,947	44	8,125	422	133	127	1,337
Brown	2,639	238	645	920	143	2,798	270	639	675	408
Butler	7,948	2,775	3,842	6,520	570	12,466	1,751	4,518	4,884	5,225
Carroll	1,318	151	66	773	993	6.038	624	643	275	2.501
Champaign	9,319	7,280	272	8,374	1,980	20,524	229	4.291	8.896	18,149
Clark	3,381	7,737	1,035	8,969	1,244	13,109	514	7,153	7,742	17,651
Clermont	1.371	214	219	890	39	1,578	179	578	95	....
Clinton	2,601	3,964	4,116	7,929	1,256	11,976	2,487	10,293	3,405	2.790
Columbiana	935	351	277	601	21	6,541	328	1,638	562	1.333
Coshocton	5.656	579	621	5.211	367	10,758	1,540	1,178	800	2,048
Crawford	6,031	13,000	2,144	5,105	1,958	20,605	3,459	15,820	7,304	7,673
Cuyahoga	21	305	3	112	15	1,344	58	60	11	15
Darke	18.783	14,504	930	17,105	4,788	27,478	700	5.236	7,938	14,462
Defiance	6,578	20.559	18,006	4,419	5,030	18,253	2,317	13,903	14,694	15,475
Delaware	4,941	3,800	417	2,428	220	8,133	678	3,200	5.620	4,886
Erie	1,461	2,528	811	1.434	506	9.414	1,488	3,227	1,069	2.024
Fairfield	11,544	6,410	7,507	17,068	1,211	19,902	1,289	12,844	20.573	20,040
Fayette	3.212	4,169	2,690	4.660	249	11,947	638	4,603	2.108	1.657
Franklin	4.310	4,001	2,507	7,845	419	16,952	602	8,078	6,003	8,713
Fulton	3,762	8,848	11,169	693	2,860	17,549	3,236	5,314	5,521	10,481
Gallia	279	16	101	224	122	817	372	84	145	278
Geauga	46	20	65	28	50	1,749	242	6	68	11
Greene	8.182	7,649	6,261	11,152	1,545	15,318	821	10,684	5,613	9,516
Guernsey	1,089	8	41	1,102	136	3,182	242	43	123	493
Hamilton	1,537	1,481	1,364	1,145	230	2,154	194	1,398	843	985
Hancock	11,887	18.733	2,127	4,489	3,584	27,923	2,526	2,986	14,890	15,729
Hardin	8,710	14,210	418	3,830	1,233	14,793	214	608	7,985	11,266

Harrison	804	87	217	1,270	2,627	5,829	716	143	169	1,022
Henry	7,711	12,830	10,794	2,161	4,831	20,098	2,663	8,588	10,484	11,714
Highland	10,308	1,609	8,592	6,753	545	18,006	1,548	5,174	3,094	3,679
Hocking	2,390	73	283	2,293	167	2,946	302	391	1,076	1,559
Holmes	5,612	3,171	1,520	5,806	1,112	12,337	6,177	5,832	1,875	4,121
Huron	4,049	12,333	4,781	3,586	1,910	22,836	3,076	9,986	1,298	4,990
Jackson	15	....	....	42	....	160	....	6	2	....
Jefferson	1,680	136	364	8,002	61	8,979	1,689	174	168	1,800
Knox	4,487	3,786	1,526	8,533	836	17,008	3,565	4,816	4,716	10,085
Lake	13	69	74	53	48	1,045	60	186	30	22
Lawrence	47	17	30	56	33	254	107	161	3	177
Licking	6,490	491	8,492	10,107	1,736	17,562	1,248	8,548	10,876	9,724
Logan	15,994	8,388	75	7,629	1,079	16,205	207	1,465	14,245	10,247
Lorain	798	2,591	579	494	197	6,741	638	1,083	387	822
Lucas	3,513	5,261	5,013	735	1,582	10,172	1,059	2,745	2,180	4,800
Madison	3,870	5,240	876	4,298	224	7,895	902	8,884	4,205	4,506
Mahoning	270	318	252	535	120	7,760	360	1,196	763	902
Marion	4,016	10,963	854	2,067	1,153	14,073	1,980	8,234	8,532	10,257
Medina	2,074	5,152	1,760	2,654	1,020	13,965	1,473	2,466	2,025	3,739
Meigs	313	77	37	183	37	444	36	48	106	111
Mercer	22,112	17,208	1,620	12,544	2,004	15,465	237	1,467	4,734	7,660
Miami	6,492	10,114	1,359	8,964	1,832	13,611	482	2,336	3,109	13,565
Monroe	1,170	24	42	1,911	82	5,574	33	7	76	172
Montgomery	6,022	6,572	1,310	767	1,547	16,286	888	3,589	4,605	10,737
Morgan	2,467	3	122	1,954	44	5,269	166	224	456	575
Morrow	3,218	7,956	1,263	1,666	561	17,085	2,850	13,370	8,737	6,830
Muskingum	3,989	80	387	2,677	114	6,170	587	427	853	822
Noble	1,534	15	32	740	44	2,451	28	152	128	188
Ottawa	1,160	4,081	2,786	683	840	8,748	1,635	1,502	191	830
Paulding	3,529	12,477	5,244	1,376	1,733	9,528½	513	2,047	2,606	8,234
Perry	5,430	819	1,785	6,110	980	9,933	967	1,326	2,117	1,624
Pickaway	7,570	4,401	6,991	12,256	1,025	15,320	1,579	7,735	12,957	13,361
Pike	3.303	137	1,476	2,265	300	3,590	588	1,278	2,078	1.594
Portage	677	833	257	1,844	176	10,644	945	478	561	2,027
Preble	7,747	3,560	3,147	6,640	1,255	14,593	1,307	6,076	6,814	8,438
Putnam	8,152	18,065	1,742	4,396	1,199	33,306	793	1,564	4,831	12,200
Richland	4,429	10,137	1,370	5,294	903	32,190	4,248	10,063	4,878	6,593
Ross	11,133	1,827	4,344	11,191	1,240	16,134	1,709	5,792	8,699	5,808
Sandusky	3,776	9,462	4,535	3,436	2,134	20,430	3,503	3,775	4,764	7,446
Scioto	1,152	32	264	738	334	1,691	565	700	324	373
Seneca	11,714	19,695	7,990	8,683	3,006	34,620	3,412	12,549	14,378	14,960
Shelby	17,545	9,181	96	6,342	1,377	17,033	288	1,588	5,312	6,678
Stark	2,517	1,821	839	3,553	153	12,609	1,866	6,084	1,202	1,645
Summit	635	932	149	597	121	7,440	655	721	525	1,377
Trumbull	101	60	39	229	38	4,408	511	64	34	178
Tuscarawas	3,084	504	297	2,534	76	9,105	1,654	8,547	776	3,980
Union	6,873	8,441	168	3,112	343	7,747	608	3,994	3.686	4.967
Van Wert	4,514	10,257	2,243	3,694	1,165	10,959	380	974	2,270	5,069
Vinton	361	8	258	330	9	552	19	212	335	238
Warren	3,512	1,141	1,128	4,952	277	9,560	896	5,981	1,191	2,153
Washington	1,849	....	60	721	44	6,597	171	308	439	623
Wayne	5,538	6,059	1,939	4,454	1,211	17,741	5,637	9,812	4,316	4,135

COMPARATIVE TABLE SHOWING PRODUCTION OF CLOVER SEED IN OHIO FOR TEN YEARS—Concluded.

Counties.	Bushels of Seed.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Williams	8,710	20,865	18,723	2,880	6,322	17,736	4,621	7,866	8,170	14,777
Wood	4,109	15,411	9.859	4,080	2,086	21,372	4,032	5,089	6,708	18.801
Wyandot	6,537	12,976	2,367	7,983	1,906	18,510	1,864	7,520	10,890	9,226
Total product	420,985	462,010	195,972	350,777	90,841	1,032,531	111,210	339,290	342,472	489,258

Average product for ten years, 383,534 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF IRISH POTATOES IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	23,524	14,688	22,263	13,701	18,323	14,339	41,607	11,109	18,084	16,832
Allen	79,705	35,050	54,096	51,029	44,459	23,188	96,243	67,093	99,723	53,644
Ashland	111,043	45,538	94,254	93,509	88,345	62,779	110,031	145,224	93,217	64,442
Ashtabula	204,586	447,711	403,128	236,789	400,765	244,397	387,018	613,805	306,763	204,063
Athens	33,860	19,397	21,779	33,665	32,445	25,399	63,707	30,593	60,332	58,769
Auglaize	107,039	54,071	66,881	45,914	45,952	25,304	145,105	83,388	116,775	60,689
Belmont	105,387	63,129	73,542	90,658	57,129	58,726	71,118	46,414	108,389	140,346
Brown	33,832	14,935	28,296	24,745	38,652	29,013	91,901	49,616	50,425	21,216
Butler	89,490	46,646	90,998	63,276	75,759	63,323	192,155	144,883	121,501	76,658
Carroll	51,167	35,962	61,582	63,610	58,008	54,195	112,880	89,341	60,915	51,235
Champaign	48,408	26,442	35,898	27,485	41,915	21,208	95,268	56,619	105,864	57,027
Clark	73,994	34,238	51,175	49,355	54,574	41,529	114,023	73,560	75,585	80,437
Clermont	75,403	37,657	78,492	69,744	56,034	62,456	124,647	81,737	82,216	67,118
Clinton	34,737	17,544	36,005	37,002	40,297	27,325	80,926	46,365	54,306	24,316
Columbiana	350,709	153,461	181,330	184,534	185,576	149,302	265,009	326,347	169,694	163,737
Coshocton	105,193	61,060	65,112	85,070	71,941	65,896	123,641	115,390	89,596	63,282
Crawford	162,589	91,745	126,445	109,739	123,988	73,451	134,246	228,213	102,915	70,850
Cuyahoga	467,748	704,867	603,554	551,647	743,559	543,867	492,300	770,201	452,298	405,137
Darke	130,244	59,939	120,118	90,034	100,463	59,242	251,336	149,572	170,106	101,303
Defiance	92,443	51,003	122,284	108,318	72,774	51,514	105,928	87,436	90,554	68,363
Delaware	53,105	27,010	23,905	31,619	33,351	20,734	49,222	48,121	82,766	57,147
Erie	263,407	304,553	384,356	263,408	312,730	248,383	313,530	326,118	170,489	216,522
Fairfield	104,047	45,467	67,997	84,054	71,746	54,052	137,465	74,280	111,800	83,625
Fayette	7,280	3,009	3,728	6,651	6,011	10,757	17,240	9,443	15,846	10,907
Franklin	125,206	88,660	68,865	68,766	82,204	75,691	119,545	86,497	176,931	210,649
Fulton	97,312	71,499	191,289	131,068	140,271	88,576	112,681	148,790	112,759	139,344
Gallia	21,493	7,668	17,691	15,205	13,015	19,898	34,002	31,163	49,672	52,300
Geauga	163,721	279,816	293,792	228,170	314,719	225,630	303,396	391,486	194,325	155,127
Greene	63,389	28,508	65,289	51,225	65,063	48,760	95,699	63,470	209,305	51,076
Guernsey	52,955	32,237	29,467	42,216	33,423	33,776	52,423	20,095	45,034	47,243
Hamilton	370,796	195,762	306,568	263,909	202,669	261,545	456,580	282,563	261,924	327,756
Hancock	121,361	84,053	113,617	88,728	80,959	52,139	117,174	116,110	95,114	68,128
Hardin	167,685	66,170	566,621	70,502	98,941	47,392	125,952	484,884	208,507	106,087

COMPARATIVE TABLE SHOWING PRODUCTION OF IRISH POTATOES IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Harrison	24,353	18,143	29,484	32,977	27,647	30,256	31,475	35,286	47,117	37,227
Henry	84,677	44,727	111,838	100,657	87,715	64,213	93,829	85,559	113,572	92,468
Highland	23,470	11,245	22,616	20,048	21,862	17,477	59,551	35,152	36,499	25,536
Hocking	66,475	27,915	41,777	54,579	35,481	38,270	76,213	43,057	53,244	50,765
Holmes	84,198	51,699	68,163	79,833	82,123	54,493	114,280	103,516	74,183	50,801
Huron	123,676	114,198	183,712	96,619	170,493	92,544	168,806	246,954	110,475	103,279
Jackson	19,730	10,263	11,752	17,637	11,083	13,791	45,390	15,515	24,764	16,489
Jefferson	71,252	41,311	50,770	58,241	46,224	57,466	96,305	79,009	65,647	98,300
Knox	55,976	27,607	31,611	44,286	55,770	39,236	103,199	108,101	80,383	53,188
Lake	106,220	187,156	183,174	155,542	208,869	166,067	186,031	255,631	162,467	171,606
Lawrence	36,595	18,185	35,636	20,039	17,874	18,633	42,400	24,306	27,417	42,095
Licking	115,380	79,272	80,109	106,814	81,105	69,427	170,258	104,574	136,196	99,660
Logan	49,591	26,050	35,180	25,702	37,856	22,965	63,674	49,411	86,830	39,129
Lorain	198,969	219,306	273,390	186,144	234,986	178,502	210,742	270,800	181,182	151,285
Lucas	296,545	277,480	429,830	280,703	343,516	251,471	335,961	260,356	210,048	248,175
Madison	15,091	9,422	10,879	15,586	15,356	13,372	32,803	14,385	30,679	26,896
Mahoning	209,642	167,348	201,250	172,425	197,760	133,950	260,534	210,881	171,666	163,656
Marion	94,012	46,019	67,496	58,589	57,598	35,823	90,626	97,006	99,745	54,853
Medina	208,279	231,926	299,735	216,759	245,032	178,142	237,196	270,125	148,562	118,286
Meigs	64,462	25,532	60,850	42,305	54,839	52,378	92,278	55,884	86,550	81,984
Mercer	84,502	47,196	42,274	31,835	32,896	23,317	94,787	54,628	72,156	37,045
Miami	98,830	49,722	87,070	71,413	66,449	45,426	180,909	101,089	131,001	97,214
Monroe	139,953	93,139	129,325	121,005	85,368	81,186	77,965	37,130	94,118	104,605
Montgomery	100,646	45,483	77,181	72,305	93,107	58,772	189,518	93,431	118,818	89,253
Morgan	52,420	27,649	26,982	38,204	29,746	29,608	58,963	35,397	53,144	58,303
Morrow	110,856	48,820	68,807	82,940	59,178	55,672	92,307	112,076	90,431	52,973
Muskingum	97,350	46,938	54,750	67,285	50,667	57,078	114,463	82,136	113,779	112,857
Noble	79,589	51,792	33,350	52,563	40,685	35,949	45,793	26,378	48,977	63,002
Ottawa	50,931	35,316	48,677	34,506	36,360	33,258	50,535	58,804	34,557	29,380
Paulding	47,156	30,577	61,103	155,748	31,663	18,171	85,738	63,214	57,514	50,811
Perry	56,666	32,096	42,467	57,580	41,315	41,625	86,165	50,544	53,792	40,482
Pickaway	41,371	20,013	33,698	31,765	21,104	29,530	63,625	28,140	91,189	69,633
Pike	66,428	27,714	45,968	36,346	30,834	24,299	63,156	20,275	38,592	22,053

Portage	601,581	714.431	813.049	712.378	775,471	473,724	637,293	778,784	482,407	378,517
Preble	40,049	22,611	50,707	40,572	53,154	31,611	106,609	66.178	61,891	37,379
Putnam	124,854	63,048	128,987	74,619	80,482	48,615	133,975	99,537	34,341	65,535
Richland	186.386	130,446	186.587	161,448	225,483	113,671	237,819	253,721	158,051	88,658
Ross	76,828	39,946	44,234	48,194	38,889	42,483	107,610	39,823	125,847	140,307
Sandusky	170,052	170,312	245,891	162,899	200,687	140,743	188,396	235.510	160,912	120,586
Scioto	101,580	65,646	75,337	81,045	67,273	58,348	103,940	57,618	95,255	84.786
Seneca	154.878	123,574	175,008	113,655	155,098	82,232	148,827	194,062	147,993	105,922
Shelby	85,035	37.952	57,393	36,202	41,111	25,364	109,525	57,520	70,271	33,207
Stark	404,152	267,908	382,709	314,916	415,061	258,558	412,341	437,378	240,987	249,616
Summit	244.840	266,166	327,643	239,935	349,608	215.308	287,431	316,211	207,741	160,242
Trumbull	222,976	333,400	362.689	318,732	351,131	207,751	453,529	493,047	280,690	242,470
Tscarawas	188,196	102,261	127,563	139,306	160,579	144,449	274,624	246,514	170,396	131,705
Union	26,646	8,960	6,716	10,572	12,844	12,092	35,317	20,972	45,110	26,809
Van Wert	80,840	39,674	94,011	60,440	43,550	25,393	86,270	58,120	75,175	37,337
Vinton	33,144	13.344	15,440	21,052	23,728	22,446	51,432	27,558	28,665	30,194
Warren	27,175	18,529	33,517	25.520	42,321	36,788	162,799	58,702	48,970	40,195
Washington	140.752	91,820	142,099	122,314	109,693	103,866	117,174	78,869	150,990	163,630
Wayne	385.049	189,821	298,606	241.197	234,325	150,250	274,178	315.879	177,390	115,030
Williams	81,006	41,434	93,283	112,681	86,237	44,184	70,573	79,983	63,886	68,125
Wood	78.592	79,796	133,774	94,274	104,640	70,222	103,283	86,775	95,878	105,530
Wyandot	84,962	34,398	66,627	57,312	67,397	32,361½	80,716	126,330	69,260	42,453
Total product	10,507,822	8,296,236	11,313,191	9,203,633	10,097,418	7,286,582	12,906,134	12,557,717	10,069,933	8,436,397
Total area	113,034	115,600	131,234	118,584	118,165	114,832	153,362	253,884	157,923	122,258

Average area for ten years, 139,890 acres.
Average product for ten years, 10,107,506 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO IN OHIO FOR TEN YEARS.

Counties.	Pounds of Tobacco.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	2,465,940	2,217,898	2,718,872	2,131,862	1,828,170	786,098	1,307,617	917,280	2,859,385	2,233,204
Allen	....	....	....	....	40	520	....	....	....	....
Ashland	....	....	1,400	....	1,400	2,995	4,800	5,600	2,500	9,320
Ashtabula	....	....	....	....	....	....	....	....	....	....
Athens	....	....	5,720	2.600	10,300	3.700	6.010	300	8,800	5.130
Auglaize	8.390	12,000	21,200	11,550	30.860	4,100	7.880	6.580	16.600	23.140
Belmont	1,055,562	824,509	762.940	704.452	1,289,763	1,226,297	1.306.728	639,956	892.332	1,552.846
Brown	4,527,058	5,098.122	4,774,309	4,534,064	8,300,029	2,008,930	2,522,900	2,337.186	3.712.431	3,344.460
Butler	422,430	710,875	713,800	1,020,535	1,035,965	531,662	371,920	468,091	452,305	546,413
Carroll	....	....	....	....	....	....	....	....	....	....
Champaign	52,780	52,190	115,240	55.262	98,080	19,100	16,474	18,400	15,580	16,600
Clark	232,880	185,635	265,860	222.335	251.060	150,260	121,737	14.566	145,141	153,035
Clermont	2,056.776	2,335,483	2,984,595	2,476.932	1,597.850	991,950	1,301,950	1,316.965	2,165.843	1,716,210
Clinton	18,450	57,900	73,040	74,624	102,546	23,590	76,500	16,500	33,500	4,900
Columbiana	....	....	....	....	....	....	....	50	....	....
Coshocton	1,500	1,500	....	....	10	....	....	....	200	....
Crawford	....	....	....	....	....	....	....	215	....	550
Cuyahoga	8,200	....	....	....	....	....	....	....	....	100
Darke	10,279,035	8,310.165	11,106,872	10,451.175	10,270.356	5,768,440	2,700.049	3,309,618	3,909.870	4,603,765
Defiance	500	1,500	1,320	3,950	5,650	3,600	3,400	....	2,850	2,240
Delaware	....	....	....	....	100	....	....	....	....	....
Erie	....	....	....	....	....	80	100	....	....	....
Fairfield	....	....	200	150	....	4	200	800	40	500
Fayette	....	....	500	....	45	....	30	....	....	....
Franklin	1,100	....	5,000	....	20	....	20	10	....	....
Fulton	....	....	....	....	....	....	....	....	....	....
Gallia	436,766	415,228	700,992	721,720	890,582	235,955	475,400	483,643	506,253	586,471
Geauga	....	....	....	....	....	24	....	....	75	....
Greene	403,058	331,896	461,063	489,975	492,439	190,540	79,650	128,810	214,776	131,908
Guernsey	144,530	133,132	141,720	99,085	240,461	218,945	252,635	99,087	185,285	161.460
Hamilton	124,700	147,260	101,900	189,270	103,422	106,940	174,120	44,599	211,411	226,633
Hancock	....	7.300	....	....	....	25½	....	35	....	60
Hardin	....	....	....	....	....	....	....	....	....	....

Harrison							80		4	
Henry			150	100	120				100	150
Highland	2,400	24,350	54,100	33,650	23,270	14,060	9,570	9,000	52,945	60,925
Hocking					400	120	550		250	1,200
Holmes			100			75			300	1,000
Huron										
Jackson										
Jefferson				7,800			192			
Knox					10			50	300	
Lake	25	1,900				650	2,000	4,000	3,900	
Lawrence	54,550	65,946	98,975	70,848	40,297	17,800	23,700	40,530	23,775	
Licking		500	1,000	2,000				142		
Logan			1,200	16,700	66,000	15	31,048	11,755	27,750	19,500
Lorain				178				186		
Lucas	200	1,800		25	300		100			
Madison					20			600	600	50
Mahoning				75,210						
Marion						100				
Medina	241,660	206,821	276,608	223,966	238.440	134.500	110.450	180,627	231,471	270,600
Meigs	7,000	5,400	22.725	23,900	1,900	9,330	10,025	5,000	4,050	690
Mercer	24.420	19,270	45,350	30,600	18,200	1,025			6.394	1.850
Miami	3,816,515	2,725,052	3,322,427	3,640.545	3,056,706	1,964,420	1,126,102	908,259	1,234,815	1,488,893
Monroe	927.760	811,200	778,970	728,515	1,388,350	1,293,479	1.496.205	748,578	1,334,203	1,864.740
Montgomery	12,609,597	9,615.419	10,323,473	13,691.551	12,918.397	7,132.269	5,227,139	5,459,681	6,801,150	5,114,350
Morgan	8,500	1,700	39,450	23,852	101,850	60,270	153,525	93,285	283,090	377,454
Morrow							32			258
Muskingum	1,800	1,200	2,800		13,340	3.300	9,200	2,500	4,000	8,130
Noble	1,031,618	917,643	974,656	642,144	1,150,675	833,680	1,321,737	601,408	1,163,432	2,534,436
Ottawa										
Paulding	7.000	13,700	14.800	6,950	4.000	800	620		4,020	2,775
Perry	2,000	1,800	3,225	2,000	7,400	1,500		3,000	320	1,285
Pickaway							40			150
Pike	22,600	47,130	50,275	26,070	17,443	22,910	27,900	8,100	30,825	21.500
Portage	1,960		800		3,100	1,000	50			200
Preble	5,032.959	3,517,182	4,724,452	5,724,404	4,905,850	3,128,000	1,838,148	2,103,300	2,274,123	1,840,017
Putnam	1,200	1,000	200	50	597	320	70			
Richland										
Ross	300						5,450	2,300	26,300	18,230
Sandusky										
Scioto	250,500	375,407	406,809	348.315	283,390	182,275	237,160	77,400	365,887	228,550
Seneca				3,600	500					75
Shelby	158,344	78,367	388,130	173.230	165,021	37,968	17,000	10,600	85,800	47,620
Stark	2,852	2,200	5,116	1,000	570	4,100		950		
Summit	700	100							3,600	5,700
Trumbull					75					
Tuscarawas							300		200	
Union		640	2,000	150			125	125	300	
Van Wert						25				
Vinton				2,200	1.850	190	25			
Warren	2,859.282	2,724,593	3,069.224	3,446.978	3,217,078	1,796.522	1,506,088	4,244,240	1,819,056	1,591,990
Washington	4,750	2,700	2,200	4.630	54,190	78,934	124.618	72.930	269,119	465,981
Wayne	331,239	349,765	889,225	334,710	306,021	248,315	186,825	209,490	235,112	220,750

COMPARATIVE TABLE SHOWING PRODUCTION OF TOBACCO IN OHIO FOR TEN YEARS—Concluded.

Counties.	Pounds of Tobacco.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Williams	....	....	....	....	....	....	....	....	....	3,500
Wood	....	....	....	....	150	....	....	....	....	....
Wyandot	200	....	....	....	....	18	....	....	....	....
Total product	49,641,586	42,355,378	50,454,983	52,484,457	49,534,158	29,242,225	24,196,189	24,601,327	31,573,098	31,511,464
Total area	55,322	58,829	67,522	56,242	57,659	40,823	34,608	32,856	41,594	50,543

Average area for ten years, 49,599 acres.
Average product for ten years, 38,559,486 pounds.

COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	25	47	72	40	99	158	42	13	4	64
Allen	13	....	186	115	221	188	602	41	235	246
Ashland	665	407	1.378	252	747	2,432	4,508	2 501	815	938
Ashtabula	37,866	84,077	44,697	33,974	65,137	55,960	71,929	89,775	49,181	35,571
Athens	....	28	90	65	....	346	506	280	279	236
Auglaize	396	420	2,624	230	319	1,022	4.909	1.222	1,412	1,442
Belmont	915	1,182	928	1,344	1,961	1.234	2,017	1,266	248	1,142
Brown	95	92	28	35	196	156	87	....	20	40
Butler	....	50	37	....	....	56	1,097	14	208	128
Carroll	312	703	1,064	440	1.872	821	3,071	2.936	551	1.233
Champaign	16	52	1,244	67	809	870	1,171	989	1.340	979
Clark	24	107	226	56	90	172	196	147	244	569
Clermont	91	71	261	153	462	200	231	169	53	324
Clinton	30	135	688	208	148	325	935	237	128	72
Columbiana	1,100	970	1,576	988	2.165	2,058	5,019	6.952	1,722	1.875
Coshocton	2,595	2,811	4,625	1,156	1,911	1.444	6.025	4,457	1.075	1,605
Crawford	120	161	562	163	701	1,090	2,241	904	1,152	923
Cuyahoga	248	404	123	221	84	279	315	1,276	321	81
Darke	202	217	829	534	847	1,354	2,228	820	331	198
Defiance	299	301	1,076	2,817	1,915	2,812	2,166	284	1,965	898
Delaware	1,050	612	1,207	383	921	975	1.426	265	516	1.167
Erie	1,933	3,632	14,085	2.428	3,482	4,582	11,342	4,673	4,261	3,084
Fairfield	71	164	682	147	676	182	762	828	150	68
Fayette	15	....	1,146	....	25	47	385	....	320	25
Franklin	217	93	210	159	801	1.946	2.469	323	927	829
Fulton	1,299	2,593	6,014	7,341	5.491	7,208	8,119	4,300	7,408	5,722
Gallia	192	66	50	68	119	200	272	64	167	71
Geauga	4.095	4,912	2,286	1,575	5,028	5,487	6,988	5,975	2,409	2.955
Greene	1.400	45	110	121	129	176	468	50	5	46
Guernsey	2,035	1,583	1,573	1,097	1,617	1,738	2 880	872	885	7,489
Hamilton	5	24	38	15	176	60	674	30	....	40
Hancock	80	90	570	168	413	1,049	1,009	449	695	509

COMPARATIVE TABLE SHOWING PRODUCTION OF BUCKWHEAT IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Hardin	608	51	527	29,358	314	658	1,330	550	1,563	922
Harrison	205	502	901	84	570	241	1,118	983	485	315
Henry	292	548	1,317	2,862	3,567	3,627	3,131	28,426	2,254	1,308
Highland	212	276	341	189	197	141	508	85	108	102
Hocking	3,507	2,942	4,885	1,792	2,137	1,127	2.830	3,623	1,303	622
Holmes	508	257	740	200	762	1,032	4.256	3,727	836	943
Huron	196	50,615	2,483	719	1,956	3,182	4,465	2,437	1,714	838
Jackson	1,784	1,991	1,377	1,509	2,254	1,823	1,129	658	206	249
Jefferson	158	406	266	128	760	303	997	972	429	288
Knox	973	1,451	2,807	347	1,043	1,634	10,182	3,510	583	1,138
Lake	2,610	3,560	2,393	1,263	955	917	2,895	3,086	2,138	741
Lawrence	256	....	11	13	93	119	307	161	50	29
Licking	1,847	1,280	2,151	1,380	3,069	2.904	9,928	1,396	900	1,334
Logan	736	168	2,105	124	813	1,370	2,385	1,287	1,210	331
Lorain	265	741	499	190	333	561	1,092	675	838	691
Lucas	3,943	5,020	10,097	13,260	8,327	10,232	10,028	6,799	7,393	4,812
Madison	48	16	941	61	54	62	278	37	185	133
Mahoning	2,100	2,728	2,124	1,628	1,713	2,559	5,135	2,674	1,319	8,233
Marion	24	12	128	102	543	325	343	434	179	379
Medina	330	685	1,359	30,370	1,060	1,226	4,439	952	373	644
Meigs	579	453	249	107	321	233	242	142	41	492
Mercer	92	98	922	139	389	754	1,909	238	296	174
Miami	36	....	662	55	57	25	261	55	26	242
Monroe	9,251	4,925	3,375	4,392	4,675	1,918	5,475	6,688	1,134	1,423
Montgomery	....	5	20	36	146	20	180	190	48	129
Morgan	1,087	598	533	631	874	518	1,352	1,063	828	512
Morrow	433	429	721	118	1,100	1,049	1,251	495	465	771
Muskingum	174	364	783	372	597	360	607	480	184	412
Noble	431	1,225	895	715	501	365	732	645	28	279
Ottawa	22	650	59	186	257	355	759	530	213	13
Paulding	437	325	2,126	2,423	3,187	4,401	1,700	186	693	522

Perry	1,934	2,339	2,627	1,225	2,384	1,148	1,579	907	849	936
Pickaway	....	....	796	45	....	....	42	10	3,838	70
Pike	2,065	2,134	2,190	583	1,525	933	1,402	365	794	85
Portage	3,228	3,971	5,004	3,540	6,007	9,237	12,327	6,778	2,373	3,578
Preble	....	....	193	5	151	54	163	12	54	105
Putnam	60	52	568	323	602	1,681	1,933	614	644	192
Richland	727	1,628	980	510	1,414	1,773	3,138	2,679	734	902
Ross	499	1,723	1,105	223	605	272	1,393	247	706	140
Sandusky	496	118	881	347	903	453	2,074	1,265	1,583	865
Scioto	1,643	1,532	765	718	1,445	652	1,723	1,767	1,267	161
Seneca	15	82	437	224	279	479	1,006	465	504	283
Shelby	17	75	2,885	268	3,496	1,357	4,777	2,468	1,728	1,191
Stark	1,235	894	509	701	1,099	1,197	3,329	3,096	690	541
Summit	1,473	784	300	313	937	2,027	3,761	3,100	1,027	1,101
Trumbull	5,937	13,612	9,100	5,609	16,693	15,846	24,074	18,546	8,552	5,937
Tuscarawas	982	936	2,508	939	1,568	1,801	4,694	2,171	1,158	2,191
Union	964	495	1,307	205	1,197	935	2,327	68	255	58
Van Wert	101	46	705	498	1,357	2,259	795	262	710	292
Vinton	1,009	2,009	1,876	587	1,646	805	1,455	1,650	656	388
Warren	....	127	77	273	195	905	579	56	41	136
Washington	2,067	2,240	2,270	1,276	2,610	1,537	2,492	1,994	913	1,423
Wayne	136	834	543	259	835	1,116	2,662	2,295	630	601
Williams	424	334	766	2,016	1,779	2,013	1,946	808	948	517
Wood	40	423	2,726	555	1,381	2,823	3,052	806	930	1,762
Wyandot	127	251	442	253	420	329	801	300	655	215
Total product	115,727	225,068	179,642	173,206	191,684	192,300	310,859	258,024	139,203	123,295
Total area	8,617	11,920	14,278	10,408	11,974	14,811	19,932	16,423	12,003	9,876

Average area for 10 years, 13,024 acres.
Average product for ten years, 190,900 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX SEED IN OHIO FOR TEN YEARS.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams								7	1	
Allen			145			17	185	108	130	207
Ashland	16,929	17,205	14,455	22,273	15,283	9,015	12,848	23,708	23,859	5,712
Ashtabula					1		502	195	71	
Athens										
Auglaize		2	7		10	126		257	20	
Belmont	5									
Brown	53			27						
Butler				90			500		35	35
Carroll								18		28
Champaign	10	170				30	60		208	275
Clark	28	45	645					129	5	384
Clermont										
Clinton		100	108	25						19
Columbiana										55
Coshocton									2	
Crawford	75	267	327	250	862	1,022	2,195	3,965	2,691	1,230
Cuyahoga						60	60			
Darke		262	482	100	85		188	10	269	343
Defiance	65			138	56		10			
Delaware	50						90			
Erie									16	
Fairfield	36									
Fayette						62			12	4
Franklin										
Fulton	299	501	9	343		10	128	385	176	190
Gallia						10	5			
Geauga	10				90	60	336	653	845	172
Greene		50	10			70	266	261		
Guernsey		4	21	5	4	12	8		3	7
Hamilton										

Hancock	.....	18	50	.....	.....	92	152	63	.....	25
Hardin	.....	85	733	.....	5	.....	200	132	235	56
Harrison	.....	.....	.....	.....	.....	.....	.....	.....	4	1,850
Henry	12	.....	12	283	10	54	5	38	.....	.....
Highland	147	64	31	.....	.....	.....	51	.....	.....	.....
Hocking	.....	.....	.....	.....	.....	.....	4	.....	.....	31
Holmes	.....	.....	.....	.....	.....	.....	.....	.....	15	.....
Huron	6,143	6,026	3,833	1,718	2,952	1,965	6,469	8,738	2,974	1,398
Jackson	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
Jefferson	.....	.....	.....	.....	.....	.....	5	6	106	12
Knox	.....	.....	.....	.....	.....	.....	40	4	.....	.....
Lake	.....	.....	10	.....	2,800	.....	.....	.....	.....	.....
Lawrence	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Licking	.....	.....	.....	.....	.....	.....	.....	6	.....	.....
Logan	.....	20	8	10	.....	.....	250	9	50	48
Lorain	2,778	2,216	1,882	774	913	1,320	2,148	1,235	600	739
Lucas	450	494	.....	500	235	245	90	402	454	115
Madison	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mahoning	.....	.....	.....	.....	.....	45	487	332	345	145
Marion	.....	.....	.....	.....	.....	779	84	40	65	348
Medina	2,645	6,390	4,072	2,719	5,922	4,370	7,611	8,434	6,547	4,164
Meigs	14	.....	.....	.....	.....	.....	.....	1,991	.....	20
Mercer	8	6	.....	10	.....	13	33	.....	.....	.....
Miami	.....	100	360	204	80	880	275	240	624	320
Monroe	.....	.....	.....	7	6	1	36	16	28	4
Montgomery	.....	.....	28	.....	125	7	48	190	189	.....
Morgan	.....	.....	.....	19	.....	.....	.....	.....	.....	.....
Morrow	.....	.....	97	.....	.....	.....	95	101	95	.....
Muskingum	13	.....	.....	.....	.....	.....	.....	.....	.....	.....
Noble	.....	5	.....	.....	.....	.....	.....	.....	.....	.....
Ottawa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Paulding	.....	.....	20	7	100	40	95	20	17	15
Perry	.....	.....	.....	.....	.....	.....	.....	.....	2	27
Pickaway	.....	60	.....	.....	.....	.....	.....	.....	.....	.....
Pike	.....	5	.....	.....	.....	.....	.....	.....	.....	.....
Portage	18	97	134	90	327	404	633	796	344	249
Preble	66	191	1,085	.....	225	344	232	491	907	738
Putnam	25	.....	9	.....	11	2	.....	.....	.....	30
Richland	1,629	1,434	1,573	1,086	3,012	1,415	4,900	4,797	2,296	378
Ross	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sandusky	.....	.....	.....	.....	.....	.....	.....	.....	37	.....
Scioto	.....	.....	.....	.....	.....	.....	28	20	.....	.....
Seneca	32	120	4	.....	220	80	202	41	202	.....
Shelby	.....	.....	448	84	120	277	111	.....	1,166	166
Stark	.....	.....	.....	5	2	7½	20	66	13	42
Summit	.....	.....	.....	.....	.....	.....	.....	.....	100	.....
Trumbull	.....	.....	.....	.....	319	518	1,792	3,106	2,236	744
Tuscarawas	.....	.....	.....	.....	.....	.....	.....	26	7	9
Union	.....	.....	.....	.....	.....	6	.....	.....	.....	.....
Van Wert	150	90	100	20	60	15	.....	60	60	.....
Vinton	.....	.....	.....	.....	.....	2	30	.....	.....	.....

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX SEED IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Bushels.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Warren	....	....	90	....	....	....	....	....	....	....
Washington	....	....	....	....	....	4	....	....	4	....
Wayne	1,580	1,916	2,237	1,117	2,412	2,261	3,948	5,677	4,824	2,794
Williams	....	....	....	....	....	....	....	....	....	....
Wood	....	....	85	75	60	....	150	418	360	105
Wyandot	....	36	....	....	....	....	....	....	100	....
Total product	33,270	37,988	33,110	31,979	36,307	25,640	47,605	67,223	43,302	23,233

Average product for ten years, 37,965 bushels.

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX IN OHIO FOR TEN YEARS.

Counties.	Pounds of Fiber.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Allen										
Ashland	1,187,045	1,155,800	800,203	1,365,500	766,360	552,500	986,550	838,407	1,464,600	607,600
Ashtabula							3,300			
Athens										
Auglaize			7							
Brown	73									
Carroll										1,000
Champaign	30									
Clark										15,000
Crawford			4,005	400	18	5	8,000	70,000		16,000
Darke									5,700	
Delaware										
Erie										
Fairfield										
Fayette					14					
Geauga							5,006	21,930	41,000	4,000
Greene										
Henry	20							6,000		
Highland		1,500								
Huron	484,200	401,300	241,500	287,300	121,400	90,115	250,680	502,804	154,208	135,800
Knox					30					
Lake					320					
Lawrence										
Licking										
Lorain	347,900	182,800	108,500	31,875	16,500	59,010	41,500	45,000	21,700	18,900
Lucas					10			158		
Mahoning							7,000	6		4,000
Marion										
Medina	48,094	83,700	121,700	55,400	63,019	37,514	121,200	232,300	324,900	196,300
Mercer										
Miami	2,000			1,006	6	84,800	22,000	3,000	21,400	20,100
Montgomery							100		9,000	
Morrow										10

COMPARATIVE TABLE SHOWING PRODUCTION OF FLAX IN OHIO FOR TEN YEARS—Concluded.

Counties.	Pounds of Fiber.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896	1895.	1894.	1893.
Portage	....	2,000	6,000	4,000	11,087	29,500	56,400	25,000	19,800	6.000
Preble	20	....	....	....	....	....	....	....	10,000	6,001
Putnam	....	....	....	400	50	....	....	....	....	....
Richland	107,800	58,800	260,000	56,800	43,000	42.650	275,400	215.100	93,000	8,112
Sandusky	....	....	....	....	....	....	....	....	....	....
Seneca	....	....	....	....	....	....	10	435	....	....
Shelby	....	....	10.000	....	6,000	1,603	....	....	15,000	16.820
Stark	....	....	....	....	....	4	....	....	....	6.000
Trumbull	....	....	....	....	....	19,000	165,700	102,235	108,300	30,500
Warren	....	20	....	....	....	....	....	....	....	....
Wayne	85,903	67,300	240,100	36,100	135,370	126,600	275.300	258.560	657,800	168.100
Totals	2,263,085	1,953,220	1,792.015	1,838,781	1,163,184	1,013,301	2,218,146	2,320,935	2,946,408	1,255,243

Average product for ten years, 1,876,431 pounds.

COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN IN OHIO FOR TEN YEARS.

Counties.	Pounds of Broom Brush.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	600	350	15,305	1,800	....	2,387	500	600	300	1,000
Allen	2,000	2,000	1,100	....	30	....	....	....	50	....
Ashland	....	350	2,540	800	800	400	3,110	3,900	1,800	....
Ashtabula	....	....	....	....	....	....	....	450	....	1,000
Athens	400	....	....	....	....	....	....	....	....	....
Auglaize	3,500	3,090	150,375	86.110	100.700	162,000	90,100	248,020	175.750	121.900
Belmont	1,388	1,125	4.121	2,000	2.000	2,320	5,008	4,320	2.468	670
Brown	10,600	4,503	6,595	300	2.714	2,693	550	8.300	2.380	825
Butler	3,400	6,550	61,050	6,000	7,500	13,800	83,000	20,500	24,400	37.200
Carroll	84	560	350	....	....	....	....	....	....	....
Champaign	30,200	16,100	56,800	345,305	47,500	21,650	....	7,600	82,550	52,000
Clark	....	1,000	15.640	900	....	....	....	....	....	....
Clermont	2,200	2,300	6,325	....	....	....	....	2,000	4,350	21,400
Clinton	....	....	175	150	....	1,610	....	400	1,000	2,300
Columbiana	....	....	....	100	....	800	350	247	....	....
Coshocton	·2,000	25	....	50	....	....	....	30	....	50
Crawford	....	625	315	....	....	1,000	....	....	....	....
Cuyahoga	100	40	....	....	....	....	....	....	....	120
Darke	14,100	28,700	71,070	39,150	41,360	3,650	17,022	36,520	58,210	22,100
Defiance	5,000	....	6,000	....	....	3,200	200	....	....	....
Delaware	....	500	600	....	3,000	....	....	....	2.300	1,000
Erie	600	2,500	3.000	....	....	4,000	10,600	2,000	15.000	....
Fairfield	262	400	6,780	700	....	350	145,250	801	1,100	9,700
Fayette	....	....	....	3	8.000	6.000	300	4,200	18.000	9.000
Franklin	13,100	6.540	19,050	6,950	39,820	4.550	6.000	4,500	23,550	43,400
Fulton	....	7,011	9,042	11,400	500	1,700	2,000	....	....	1,200
Gallia	700	4,000	2,025	5,495	4,600	....	3,600	....	135	....
Geauga	....	....	....	....	....	....	1,400	....	....	....
Greene	4.650	5.650	29,135	700	....	500	4,000	....	8,000	8,200
Guernsey	400	900	1,400	630	175	800	....	....	....	....
Hamilton	3,500	2,364	8,117	18,000	82	....	1,300	12,800	7,000	5,089

COMPARATIVE TABLE SHOWING PRODUCTION OF BROOM CORN IN OHIO FOR TEN YEARS—Concluded.

Counties.	Pounds of Broom Brush.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Hancock	....	6,000	16,020	88	....	520	3,000	....	....	....
Hardin	60,000	800	5,720	....	....	1,000	310	200	22,000	2,700
Harrison	....	732	238	....	....	....	....	100	....	....
Henry	....	....	435	1,200	1,000	4,000	4,550	....	....	....
Highland	6,200	8,430	9.500	3,110	200	8,000	....	900	2,600	465
Hocking	1,470	1,640	4.335	2,400	1,000	2,090	450	3,400	2,800	300
Holmes		1,725	3,301	10	600	2,000	....	400	2,100	....
Huron	6,000	5,400	5,675	....	....	....	....	....	1,200	600
Jackson	....	....	....	....	....	....	....	....	....	....
Jefferson	150	....	....	....	....	....	....	....	2,209	510
Knox	....	....	80	....	....	....	....	1,910	....	....
Lake	....	....	....	....	....	....	....	4,000	....	....
Lawrence	....	....	475	....	....	3,700	2,427	3.000	1,500	800
Licking	8,100	3,000	12,387	12,800	2,500	3,150	8,010	2,500	5,200	11,500
Logan	....	....	8,500	....	....	....	....	27,000	22,600	....
Lorain	....	....	....	....	....	3,809	....	2,400	....	....
Lucas	....	25	800	....	....	....	5,000	....	1,500	....
Madison	22,000	....	....	....	....	....	....	2,000	....	1,600
Mahoning	....	....	100	15	60	....	....	....	....	36
Marion	10,100	5,700	25,340	14,550	....	....	5,639	....	....	....
Medina	600	1,950	1,800	....	....	....	....	1,400	....	....
Meigs	3,980	4,000	16,756	276	....	1,400	1,045	5,930	....	1,850
Mercer	3,075	1,500	11,074	1,080	80	2,100	3,000	14,200	6,000	2,300
Miami	4,150	22,450	42,890	10,630	6,000	4,000	....	3,625	14,500	6,300
Monroe	56	....	2,312	472	345	25	145,400	50	100	....
Montgomery	28,090	23,600	19,300	44,900	21,500	1,400	....	25,600	33,000	23,970
Morgan	190	1,450	7,500	260	1,450	310	....	540	35	171
Morrow	....	1,800	100	....	....	....	....	....	1,550	....
Muskingum	400	85	140	60	....	300	500	100	....	....
Noble	....	2,000	2,000	....	900	2,000	....	502	471	....
Ottawa	114	....	....	....	....	....	....	....	....	....
Paulding	....	....	3,300	400	400	....	....	....	....	....
Perry	....	1,700	1,423	....	....	900	....	....	75	154

Pickaway	4,900	52,000	185,300	....	....	....	....	66,000	64,000	85,200
Pike	400	3,750	4,925	....	1,000	2,000	300	200	2,000	1,000
Portage	....	....	....	....	....	700	....	200	....	400
Preble	10,600	16,000	27,530	3,180	2,000	4,820	67,000	9,300	3,842	10,050
Putnam	....	96	2,800	20	36,000	15,000	700	500	40	....
Richland	....	2,100	390	....	100	700	1,460	....	5,675	2,600
Ross	8,000	8,700	52,700	8,400	500	3,000	....	....	200	306
Sandusky	1,000	1,600	1,200	....	....	....	....	109	....	....
Scioto	250	4,800	15,200	280	200	2,070	1,000	3,944	....	....
Seneca	....	....	600	....	....	....	700	....	....	125
Shelby	6,400	4,354	37,278	11,000	4,000	4,400	7,200	....	99	5,100
Stark	....	6,180	....	3,832	50	....	....	....	800	1,000
Summit	500	53	....	250	....	....	....	....	1,200	....
Trumbull	100	100	....	1,000	....	....	....	....	....	50
Tuscarawas	500	2,005	2,590	664	2,000	8.000	3,090	1,500	....	130
Union	150	3,000	8,287	5,055	2,000	2,500	7,850	5,600	2,354	....
Van Wert	90	160	17,300	8,000	....	....	....	250	....	....
Vinton	....	....	800	....	....	100	....	....	1,150	....
Warren	100	....	11,075	3,600	....	....	1,000	....	....	....
Washington	....	170	2,062	1,000	600	....	....	....	200	....
Wayne	530	....	5,285	400	....	....	50	1,755	1,106	20
Williams	....	2,125	....	2,000	....	....	....	400	1,800	....
Wood	....	3,200	1,900	....	....	....	....	1,500	....	160
Wyandot	1,100	....	2,000	2,000	900	....	....	....	....	....
Total product	288,080	301,563	1,057,693	669,475	344,166	317,404	593,971	543,203	637,248	497,551
Total area	686	726	2,228	907	748	781	979	1,053	1,125	1,582

Average area for ten years, 1,081 acres.
Average product for ten years, 525,035 pounds.

COMPARATIVE TABLE SHOWING USE OF COMMERCIAL FERTILIZERS FOR TEN YEARS.

Counties.	Pounds used.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	3,211,435	2,919,220	2,931,140	3,574,714	3,026.600	2,268,462	2,101.680	2,381,250	2,569,700	2,785.820
Allen	398,000	328,400	340,500	443,040	150.190	104,924	180.475	369,900	273,100	146.140
Ashland	2,397,610	2,191,350	2,419.320	2,697,880	2,657.880	2,095.100	1,382.973	1,751,900	1,401,600	1,163.585
Ashtabula	5,478,807	4,419,249	3,827.922	4,290,050	4,290.760	3,999.040	3,468.633	4,668.300	3,690,504	3,343.866
Athens	1,371,910	1,103.641	1,626,770	1,796,700	1,844.100	1,609,405	1,414,960	1,709,990	1,104,640	1,291,083
Auglaize	833,550	344,210	183,990	394,450	83.100	53,600	25,500	19,800	4,100	....
Belmont	2,054,865	1,794,244	2,221,540	1,913.426	1.726,742	2,140,275	1.777,607	1,623,377	1.082,648	1,168.036
Brown	1,938,785	1,627,582	1,717,572	4.079,375	3,640,480	1,218,577	1,038,700	1,671,600	1,839,765	1,481,161
Butler	995,900	317,940	185.405	1,064.300	493,840	214,100	143.250	145,450	186,625	120,690
Carroll	1,671,900	1,556,340	1,177,753	1,678,730	1.899.281	1.703.125	1,213,670	1,053,103	852,648	819.830
Champaign	2,526,150	1,844,200	1,586.350	2,691,482	1,410,980	841.820	788.630	1,354,070	694,750	744,540
Clark	1,591,200	908,360	883.970	1,341,070	1,034.668	646.800	396,708	578,500	246.016	178,450
Clermont	1,328,050	1,160,755	1,040,330	1,205,660	1,032,190	753,600	649,535	1,122,980	995,718	975,553
Clinton	2,623,164	1,280,500	764,300	1,514,200	810.263	665.048	336,560	795,230	420.000	727,011
Columbiana	3,171,208	3,182,900	3.721.414	3,982,220	3.399.088	3.255,009	2,763.300	2,563,700	2,183,950	2,258,595
Coshocton	2,171,770	1,457,665	1,239,765	1,891,700	1,461,990	1,163.050	827,454	1,286,006	760,186	747,825
Crawford	1,703,200	1,218,523	1,357,220	1,511,020	1,327,400	1,067.438	711,020	1,116,918	707,600	528.610
Cuyahoga	3,827,206	3,838,160	11,955,470	4,470,300	3,610.600	2,984,390	3,539.340	3,351,100	3,974.950	3,743.960
Darke	1,369,520	716.975	783,340	1,997,157	914.138	694.410	582.515	926,900	587.980	415.980
Defiance	65,060	90,500	76,500	67,200	75,300	57,450	32,000	46,500	45,320	19,000
Delaware	1,007,520	1,043,086	978,863	1,189,350	788,100	237.456	295,000	665,680	407,430	399,459
Erie	1,277,350	1,231,900	812,730	1,460,350	903.870	674.760	683,290	536,501	344,500	430.424
Fairfield	4,847,820	2,876,020	2,579.480	4,186,150	2,755.650	1,885.490	1,408,600	2,503,250	1,394,252	1,257.030
Fayette	2,948,200	2,525,115	1,450,100	1,829,450	1,573,471	782,171	596.436	745,700	406,800	316,064
Franklin	1,471,528	922,620	655,400	723,500	296,350	200.701	252,750	621,375	273,816	278,450
Fulton	76,900	93,600	147,425	125,380	151,250	104,900	28,900	86,100	102,750	96,160
Gallia	1,119,100	1,825,230	2,051,730	2,318,660	2,341,521	2,479,963	1,750,005	1,654,000	1,298,476	1,435,245
Geauga	2,989,500	2,526,400	2,852,840	2,626,425	2,391,347	2,313,150	1,882,823	2,298,515	1,951,406	1,944,155
Greene	1,662,900	738,900	622,100	859,250	529,400	261,940	123,300	575,900	332,620	304,800
Guernsey	1,907,895	1,601,358	1,503,190	2,039,340	2,136,725	1,789,000	1,402,200	1,681,506	987,435	1,064,792
Hamilton	....	....	143,231	....	....	....	....	....	....	....
Hancock	805,600	615,350	456,250	738,800	494,000	231,350	263,555	449,340	213,400	189,750

Hardin	575,700	352,850	415,700	279,300	146,900	34,850	100,200	175,900	65,400	23,700
Harrison	898,700	669,001	674,300	897,780	810,421	1,316,690	726,105	737,638	487,350	455,650
Henry	59,369	93,052	82,150	72,240	70,100	40,300	26,900	45,600	8,350	32,172
Highland	4,596,340	3,679,770	2,868,200	3,300,780	3,848,215	3,251,640	2,397,020	3,149,200	2,011,750	2,036,730
Hocking	1,719,876	1,618,250	1,578,385	2,357,840	2,356,851	2,027,768	2,002,923	1,622,515	1,402,640	1,398,065
Holmes	1,849,383	1,746,250	1,263,950	1,702,830	2,120,800	1,388,720	1,210,950	1,408,280	667,224	924,022
Huron	4,200,410	3,373,021	2,590,950	4,068,079	2,868,650	2,794,010	2,014,068	2,735,670	1,939,160	1,862,865
Jackson	2,187,610	1,582,400	2,004,319	2,380,320	1,857,810	1,934,568	1,484,910	2,086,300	1,469,915	1,308,360
Jefferson	1,317,040	1,067,340	994,450	1,151,650	1,422,910	1,447,120	1,221,682	1,601,339	899,400	802,790
Knox	2,402,070	2,390,350	2,699,220	3,224,630	2,402,450	1,367,825	1,405,140	2,110,998	2,041,318	1,334,675
Lake	1,435,200	1,730,900	1,129,500	1,743,790	1,117,600	550,429	681,700	966,400	1,066,800	1,025,100
Lawrence	315,006	454,960	520,627	554,190	415,800	205,350	211,125	162,995	85,600	124,150
Licking	3,081,550	2,333,950	2,330,497	3,853,490	2,297,390	1,346,860	1,104,810	2,013,290	977,150	1,125,827
Logan	1,276,300	661,550	582,500	1,215,956	382,200	193,890	161,300	160,200	217,750	75,300
Lorain	3,557,700	3,646,110	2,672,400	2,192,506	3,074,430	2,517,699	1,740,420	2,384,951	1,380,519	1,424,040
Lucas	106,280	72,400	72,900	250,510	147,500	81,400	118,700	192,900	178,150	138,800
Madison	599,064	217,000	117,100	173,945	60,600	8,000	....	44,000	1,000	33,600
Mahoning	4,011,274	3,926,690	3,286,717	2,574,465	3,673,980	3,992,194	2,965,486	4,172,897	2,543,729	2,330,422
Marion	99,530	320,215	255,900	331,100	257,900	81,700	90,910	114,012	16,100	22,700
Medina	5,532,950	5,065,486	5,248,250	669,380	5,267,500	4,399,290	3,257,420	4,417,645	3,062,000	3,260,937
Meigs	1,686,792	2,395,118	2,616,850	2,762,530	2,931,254	2,378,017	1,955,889	2,407,860	1,525,990	1,809,080
Mercer	320,300	251,200	134,500	178,150	102,100	68,100	8,500	26,900	5,100	7,500
Miami	2,007,400	1,453,830	1,373,080	2,298,280	1,310,426	696,650	672,460	661,043	397,160	367,500
Monroe	2,277,100	1,735,100	1,627,468	4,850,551	2,321,430	1,890,260	1,585,502	1,540,260	1,053,431	1,080,584
Montgomery	3,584,425	2,666,660	1,915,300	3,326,597	2,391,778	2,175,490	1,437,850	1,525,930	997,010	1,139,540
Morgan	2,195,700	1,935,000	1,816,257	2,368,800	2,304,923	2,370,650	1,942,650	2,432,358	1,743,561	1,531,670
Morrow	2,310,680	1,696,020	2,255,210	2,745,410	2,323,896	1,811,375	856,191	1,669,270	947,100	872,710
Muskingum	2,874,550	2,632,780	2,629,010	3,513,910	2,832,165	3,258,748	2,648,795	2,892,991	1,502,046	1,714,000
Noble	1,426,800	1,142,926	964,400	1,259,315	1,067,016	1,000,100	1,090,089	1,186,620	470,310	476,980
Ottawa	8,000	2,200	3,800	5,700	1,400	7,400	600	5,800	2,500	7,000
Paulding	....	....	2,190	1,700	14,243	1,700	4,920	5,300	....	5,800
Perry	3,523,820	2,988,770	2,654,900	3,835,460	3,650,810	3,437,350	2,751,630	3,033,916	2,115,580	2,014,200
Pickaway	3,746,290	1,962,860	1,934,100	2,244,200	587,913	452,700	543,050	378,500	184,044	258,200
Pike	2,434,970	1,715,964	1,919,798	2,773,350	2,680,680	1,917,743	1,771,050	1,522,140	1,547,080	1,431,400
Portage	4,779,116	5,128,260	4,257,770	3,636,760	3,451,854	3,698,352	3,208,740	3,476,300	2,778,452	2,435,954
Preble	6,472,252	5,240,950	4,093,285	5,992,850	4,131,015	3,406,290	3,581,750	3,943,100	3,285,450	3,079,140
Putnam	21,750	....	9,500	2,300	6,000	2,600	....	5,000	2,900	....
Richland	2,849,100	2,817,150	2,645,961	3,540,495	3,341,551	2,745,460	1,748,700	2,775,207	1,285,430	1,232,380
Ross	3,565,257	2,127,550	1,751,290	3,608,580	2,156,360	1,835,642	1,352,850	1,608,255	1,504,360	1,098,400
Sandusky	760,860	300,762	180,900	658,700	434,100	284,400	272,085	181,226	121,850	176,750
Scioto	2,570,700	3,092,974	2,836,000	3,033,300	1,984,505	1,526,890	1,913,312	1,607,544	1,319,295	1,674,125
Seneca	4,013,286	3,265,950	2,196,480	3,606,934	2,390,500	1,900,840	1,458,930	2,623,150	969,900	1,232,830
Shelby	1,417,250	690,029	662,200	1,476,300	582,510	361,570	533,670	781,750	221,950	71,300
Stark	4,224,185	3,899,847	3,301,750	3,253,025	3,535,770	2,268,469	2,157,900	2,695,854	1,913,388	1,722,310
Summit	3,020,780	3,578,950	3,207,000	3,445,990	2,781,627	2,337,740	1,613,981	165,105	1,302,750	1,231,800
Trumbull	3,218,700	3,532,714	3,322,727	3,251,152	3,320,628	2,915,942	2,427,010	3,533,860	2,802,490	2,635,404
Tuscarawas	1,564,780	1,380,500	1,095,122	1,706,576	1,573,450	1,209,200	1,054,430	1,117,375	755,485	666,055
Union	511,196	234,100	455,405	579,575	168,350	62,900	84,050	153,900	339,600	69,700
Van Wert	....	....	2,000	....	1,000	1,600	....	600	1,000	2,000
Vinton	1,288,875	1,108,500	1,121,410	1,997,590	1,964,350	1,407,600	1,294,950	1,589,939	1,152,383	1,178,276
Warren	1,399,350	825,548	65,300	953,600	870,900	562,750	892,150	837,200	653,300	706,050

COMPARATIVE TABLE SHOWING USE OF COMMERCIAL FERTILIZERS FOR TEN YEARS—Concluded.

Counties.	Pounds used.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Washington	3,400,987	3,495,070	3,997,240	5,170,510	4,617,730	3,375,175	3,294,850	4,260,500	3,025,166	2,861,420
Wayne	6,900,825	6,036,462	5,895,201	5,516,148	4,503,060	3,560,698	3,152,538	4,128,876	2,752,086	2,794,759
Williams	93,300	128,200	79,825	235,000	175,550	63,300	116,700	235,340	52,200	36,350
Wood	232,800	366,120	403,500	725,940	518,300	453,400	319,300	333,680	525,700	234,560
Wyandot	1,027,450	696,400	643,900	710,500	574,750	217,516	153,700	348,480	180,000	123,200
Total product	182,894,581	153,816,702	149,752,554	178,926,948	152,190,375	123,146,474	102,383,910	126,297,999	91,290,340	88,279,477
Total cost	1,764,445	$1,665,610	$1,482,390	$2,299,136	$1,543,915	$1,481,583	$1,168,657	$1,529,088	$1,162,981	$1,180,448

Average number of pounds for ten years, 134,897,936 pounds.
Average cost for ten years, $1,527,825.

COMPARATIVE TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR TEN YEARS.

Counties.	Pounds Shorn.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Adams	34,170	38,247	44,800	43.672	49,291	39,021	37,878	60,870	65.518	60,442
Allen	58,951	85,797	122,746	104.950	101,433	77,012	76,141	93.728	130,117	130.849
Ashland	199,220	212,363	209.384	245.615	312.500	169,597	203,188	189.455	218,256	231.198
Ashtabula	53,096	60,939	84,189	86.941	95.031	90,381	77,075	11.799	109,793	120,659
Athens	223,510	266,529	241.937	271,610	244.080	196,726	215.524	292.028	361.205	371.618
Auglaize	41,392	51,515	52.137	54,598	58.756	49,405	53.662	68.827	85.365	65.622
Belmont	340,595	380,797	407.023	426.580	387.709	348.934	359,787	452.450	553.076	556.100
Brown	35,737	52,579	56,980	60.240	53.060	49.705	41.270	58.635	59.686	51.855
Butler	38,295	37,169	46.408	36.797	37.791	25.832	25.615	37.997	40,128	46,805
Carroll	285,676	336.840	329.045	343.829	324,576	326,937	314.263	380.926	466,152	474,380
Champaign	89,522	119,319	128.017	126.343	126.897	128,211	104,085	194.617	171,499	175.776
Clark	99,579	114,949	112.222	99.718	153.424	120.487	142,509	205.945	202,824	257,072
Clermont	19,053	28,776	34.340	26.691	33.582	25.554	24.811	27.456	31,110	25,183
Clinton	104,528	112,815	138,618	122.750	132,597	97,317	115.515	4.615	154,632	143.152
Columbiana	122,708	167,791	169.436	181,462	176.251	155.007	170,504	201.560	235,916	280.574
Coshocton	456,812	473,131	445.601	428.255	352.528	404.367	463,164	533,410	580.978	636.198
Crawford	208,226	220,206	228.378	177.393	220.367	199.646	201.365	220.954	223.891	230.871
Cuyahoga	29,596	28,457	26.949	30.982	31.282	29.773	27.188	31,680	34,233	43.295
Darke	29,285	31,171	39.620	39.960	38.301	28.031	24,013	36,032	49,762	40,375
Defiance	70,421	78,156	80.508	76.257	74.626	62,783	71.401	72.826	81,042	76.812
Delaware	234,583	243,245	230.806	252.780	221.301	186,144	210.081	262,103	323,385	245,081
Erie	59,474	67.367	64.621	69.572	63,289	59,675	65,514	75.952	75,379	102,522
Fairfield	66,819	71,324	77,127	87,511	91,616	56,350	53,098	81.434	132,584	144,008
Fayette	35,958	49,850	51,171	33.199	37,537	49 655	44,315	69,980	81,906	106,828
Franklin	50,781	49,988	43,255	52,330	57,571	46,748	44,271	54,448	55,828	66,808
Fulton	82,581	105,710	119.624	102,542	127,934	110,902	96,385	96.278	154,899	186,085
Gallia	43,173	53,338	57,537	61.700	72,843	76,464	61,945	74,951	90,473	86,914
Geauga	39,415	49,863	53,826	63.852	82,311	71,056	66,335	73,155	95.647	89.524
Greene	98,246	123,998	104,916	107,164	94.138	99,616	91,028	131,087	136.163	94,759
Guernsey	377,626	443,275	446,661	432,097	398.901	355,240	378,170	439.496	540,090	568,605
Hamilton	3,039	6,605	5,880	3,379	6,024	6,272	....	6.938	8,727	11,949
Hancock	170,155	216,779	197,056	192,938	194,200	171,988	155,955	201,755	219,393	224,107
Hardin	137,012	141,815	158,254	140,341	155,790	45,158	154,248	173,476	210,119	169,343

COMPARATIVE TABLE SHOWING PRODUCTION OF WOOL IN OHIO FOR TEN YEARS—Concluded.

Counties.	Pounds Shorn.									
	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.	1893.
Harrison	574,998	595,545	570,575	540,864	580,209	562,095	539,373	676,295	812,750	814,982
Henry	36,548	40,734	47,672	44,841	49,356	41,028	36,505	52,332	96,426	59,769
Highland	75,950	115,618	105,851	110,726	109,426	84,205	87,176	114,880	126,252	118,008
Hocking	69,505	88,924	76,176	87,109	86,158	83,317	97,560	102,325	141,630	135,023
Holmes	88,410	107,969	118,367	123,153	142,832	118,686	148,219	148,645	183,859	189,520
Huron	310,231	351,575	313,015	354,720	283,336	284,424	275,803	297,408	334,188	343,096
Jackson	25,619	35,414	32,678	41,820	41,888	44,014	61,257	65,153	70,813	62,654
Jefferson	279,106	324,503	313,546	335,548	314,497	310,654	290,035	354,508	432,182	431,910
Knox	531,337	636,745	487,947	503,681	498,445	457,119	460,255	529,881	574,810	621,218
Lake	14,809	29,504	30,708	25,981	24,688	32,918	38,138	38,457	48,248	39,226
Lawrence	5,681	6,772	9,440	5,681	11,348	10,165	11,131	12,085	20,809	16,804
Licking	594,251	519,917	445,798	534,616	543,343	470,768	527,657	584,445	702,301	759,898
Logan	159,094	175,368	148,441	206,580	176,567	237,135	155,657	200,477	250,431	299,071
Lorain	106,101	130,316	128,508	118,142	118,695	115,431	125,062	126,229	159,756	157,368
Lucas	9,639	10,971	14,342	15,618	13,416	14,290	12,426	16,651	18,981	21,881
Madison	55,779	81.536	101,683	100,981	150,909	164,085	144,390	189,896	213,181	265,499
Mahoning	83,723	111,351	122.254	115,545	132.501	133,325	145,645	218,210	224,929	226,576
Marion	272,410	372.143	360,073	300,818	360,904	317,326	328,133	340,669	391.407	341,086
Medina	121,472	167,779	180,371	181,775	180,121	170,083	159,538	192,333	217.140	210,147
Meigs	118.421	155.792	138,332	143,300	143,743	132,118	137,653	216,315	239,056	213,029
Mercer	47,953	63,264	61,771	58,840	62,504	48,882	38,049	49,194	70,037	70,029
Miami	10,339	17,095	19,239	18,179	20,255	19,570	19,488	21,750	28,572	31,708
Monroe	60,734	77,222	87,280	94,018	92,446	70,686	71,673	108,718	155,480	179,785
Montgomery	9.999	8,249	8,932	11,711	15,400	11,713	7,916	13,033	19,060	22,675
Morgan	357,027	404,740	409,002	380,376	339,835	312,424	334,887	435,234	506,300	511,130
Morrow	389,462	367,592	348,507	370,108	348,115	341,632	322,291	368,913	452,859	472,037
Muskingum	459,276	541.340	500,502	458,708	450,004	441,585	472,490	540,753	567,953	588,831
Noble	298.045	343,522	292,775	302,211	258,796	232,378	243,583	343,803	424,738	384,021
Ottawa	28,681	27,304	24,397	23,935	28,259	27,160	27,860	33,038	36,344	38,143
Paulding	38,192	47,429	40,518	35,963	35,192	24,015	19,153	29,651	29,368	30,021
Perry	128,001	151,056	153,238	144,170	143,651	131,731	156,250	196,777	224,612	204,636
Pickaway	51.701	40,489	50,416	59,604	35,951	38,315	45,628	71,549	....	63,447
Pike	13,667	16.693	20,212	16,311	20,547	21,761	22,435	27,616	32,038	28,840

Portage	99,099	120,195	141,814	126,665	122,835	118,615	120,350	155,640	182,617	178,005
Preble	20,595	26,399	32,247	34,575	39,887	31,584	33,159	35,359	44,431	39,167
Putnam	50,618	57,420	64,454	43,257	53,571	49,363	34,845	55,330	61,908	56,546
Richland	180,113	205,737	192,620	192,836	218,367	164,947	163,781	215,003	230,000	251,568
Ross	30,261	32,291	46,451	67,999	55,115	53,111	46,679	68,542	63,811	68,282
Sandusky	74,499	75,898	81,806	82,044	83,572	85,016	65,986	105,756	117,395	84,235
Scioto	5,025	7,225	5,511	5,554	5,768	5,508	6,297	8,654	7,776	5,652
Seneca	192,198	522,593	182,681	177,127	174,341	145,419	162,462	204,117	202,496	211,600
Shelby	26,383	39.876	39,859	40,480	36,368	29,130	28,905	47,185	33,822	39,311
Stark	85,235	102,874	117,935	124,765	136,455	112,335	130,354	158,771	194,159	185,399
Summit	34,360	49,286	51,532	40,961	48,618	44,759	41,179	59,435	65,306	66,760
Trumbull	80,880	109,574	137,088	134,121	148,291	135,160	140,458	179,270	211,540	212,160
Tuscarawas	143,737	155,922	158,758	155,420	151,658	142,789	151,606	202,810	262,672	272,365
Union	178,228	216,262	252,422	252,370	203,216	194,238	190,750	234,934	273,134	315,100
Van Wert	63,594	72,707	83,240	61,674	74,896	50,665	43,495	74,037	56,585	62,104
Vinton	96,741	105,460	90,083	80,062	104,481	98,716	110,548	136,158	150,964	38.360
Warren	34,333	46,366	50,763	64,112	70,676	59,385	61,164	69,788	68,108	82,132
Washington	162,764	191,940	101.682	198,705	199,010	183,583	296,001	267,207	349,428	327,404
Wayne	107,773	127,400	131,031	125,543	133,238	116,171	107,401	136,397	153,415	155,215
Williams	174,932	163,905	157,452	153,176	166,295	136,522	135,849	149,616	162,474	164,650
Wood	61,112	71,556	99,065	75,379	75,567	102,511	84,074	97,599	86,055	117,609
Wyandot	413,367	326,353	313,215	331,047	286,275	352,924	368,432	375,920	406,395	346,650
Total product	11,681,242	13,512,413	12,992,842	13,017,052	13,104,374	11,877,503	12,262,439	14,671,104	17,161,826	17,284,073

Average product for ten years, 13,756,486 pounds.

TABLE SHOWING THE NUMBER OF HORSES IN OHIO FOR TEN YEARS, INCLUDING CITIES AND RURAL DISTRICTS.

Counties.	Number of Horses.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	4,641	4,809	4,927	4,622	4,503	4,426	4,670	4,927	5,011	5,705
Allen	9,087	8,981	8,638	8,727	8,225	8,397	8,894	9,174	9,193	9,231
Ashland	7,571	7,180	7,020	7,104	6,999	7,009	6,698	7,045	7,784	8,144
Ashtabula	9,906	9,186	9,027	9,038	9,370	9,833	10,424	10,960	11,132	11,576
Athens	4,438	4,375	4,352	4,170	4,543	4,637	4,918	5,063	5,349	5,736
Auglaize	8,541	8,701	8,489	8,178	7,869	8,101	8,648	8,883	9,171	9,093
Belmont	8,508	8,597	8,689	7,551	8,228	8,480	8,755	9,239	10,249	11,002
Brown	6,420	6,542	6,504	6,714	6,591	6,567	7,214	7,014	7,313	7,821
Butler	10,440	10,447	10,092	10,350	10,472	10,677	10,841	11,349	11,887	12,274
Carroll	4,365	4,197	4,301	4,407	4,390	4,599	4,732	5,189	5,833	6,350
Champaign	10,453	10,429	10,102	10,143	9,969	10,080	10,512	11,801	11,809	12,141
Clark	10,899	10,593	11,171	11,412	11,004	11,371	11,709	11,661	11,392	12,476
Clermont	6,606	6,593	6,867	7,078	6,644	6,676	7,351	7,292	7,667	8,447
Clinton	9,568	9,356	8,890	9,022	8,755	9,002	9,576	9,778	10,480	11,074
Columbiana	10,024	9,489	9,784	9,389	9,384	9,503	9,494	9,567	9,854	10,260
Coshocton	5,968	5,814	5,763	6,013	6,607	6,904	7,018	7,524	7,391	8,122
Crawford	8,713	8,521	8,614	8,391	8,232	8,537	8,374	8,406	8,631	8,595
Cuyahoga	17,598	18,032	21,836	18,158	18,729	18,624	19,443	19,931	18,833	19,636
Darke	16,534	15,617	15,691	15,044	14,552	14,590	14,373	15,061	15,700	15,631
Defiance	6,352	6,261	6,131	5,812	5,941	6,460	6,559	6,671	6,748	7,885
Delaware	7,727	7,700	7,392	6,881	7,310	7,194	7,578	8,400	9,161	10,069
Erie	5,660	5,560	5,674	5,497	4,789	5,385	5,553	5,600	5,994	6,104
Fairfield	9,666	9,591	9,465	9,669	10,019	10,117	9,562	9,807	10,533	10,654
Fayette	9,289	8,979	8,888	9,059	8,782	9,120	9,600	9,763	11,143	11,171
Franklin	14,804	14,165	14,613	14,571	14,504	14,697	15,551	15,862	18,136	17,667
Fulton	7,269	7,362	7,744	6,915	7,112	7,013	6,552	7,376	7,653	7,816
Gallia	4,520	4,690	5,178	4,473	4,892	4,682	4,968	5,315	5,673	5,741
Geauga	5,248	5,262	5,258	5,232	5,345	5,351	5,707	5,821	5,780	6,032
Greene	9,757	9,878	9,504	9,958	9,734	10,229	10,532	10,918	11,510	11,790
Guernsey	5,094	5,463	5,210	5,359	5,427	5,676	6,390	6,079	6,911	6,671
Hamilton	16,498	16,625	17,044	16,847	17,799	18,169	18,782	19,527	20,330	20,656

Hancock	10,468	10,395	10,149	10,226	10,200	10,544	10,612	10,918	11,405	12,179
Hardin	8,130	7,694	7,580	7,793	6,960	7,861	7,646	8,177	8,457	8,861
Harrison	4,988	4,827	5,081	4,741	4,671	4,798	4,943	5,274	5,780	6,418
Henry	7,085	6,987	6,728	5,578	6,678	6,481	6,683	6,891	7,167	7,312
Highland	8,437	8,538	8,379	8,177	8,027	8,284	8,518	9,262	8,298	10,088
Hocking	3,568	3,555	3,637	3,757	3,565	3,404	3,743	4,046	3,980	4,198
Holmes	7,132	6,786	6,594	6,807	6,851	6,491	6,303	6,408	6,972	7,428
Huron	7,855	7,877	7,871	10,056	8,183	8,171	8,278	8,460	8,870	9,090
Jackson	3,441	3,603	3,606	3,590	3,462	3,549	3,609	3,492	3,868	4,026
Jefferson	5,595	5,369	5,430	5,701	5,769	6,097	6,307	6,312	6,813	7,231
Knox	7,735	7,148	6,933	7,693	7,304	7,730	8,059	8,593	9,248	9,722
Lake	4,428	4,205	4,346	4,286	4,830	4,262	4,560	4,614	4,899	4,969
Lawrence	3,767	3,869	3,730	3,647	3,523	3,586	3,668	3,685	4,301	4,142
Licking	12,878	12,188	12,099	12,198	12,138	12,571	12,825	13,915	14,087	14,538
Logan	9,768	9,555	9,187	9,188	8,346	8,695	8,711	9,115	10,065	10,040
Lorain	9,172	9,101	8,938	8,803	9,097	9,099	9,521	8,699	10,268	10,727
Lucas	9,682	9,751	9,773	9,549	9,124	9,329	9,202	8,826	8,906	9,024
Madison	9,644	9,470	9,116	8,973	9,404	9,266	9,671	10,392	10,652	10,548
Mahoning	8,515	8,207	8,144	8,515	8,263	8,493	8,963	9,029	9,532	9,725
Marion	7,683	7,339	7,204	7,169	7,342	7,534	7,543	8,142	8,621	9,117
Medina	8,179	8,038	8,195	8,108	7,721	8,000	8,086	8,326	8,971	9,312
Meigs	4,603	4,792	5,028	5,197	5,304	5,345	5,407	5,679	5,955	6,323
Mercer	9,430	9,217	8,769	8,402	7,939	8,278	8,246	8,295	9,061	9,393
Miami	11,542	11,175	10,634	11,396	10,367	11,450	11,217	11,289	11,999	12,207
Monroe	5,268	5,030	5,464	5,174	4,754	4,965	5,171	5,965	5,777	6,341
Montgomery	16,140	15,117	16,156	16,310	15,759	16,757	15,797	16,143	16,833	17,264
Morgan	4,560	4,867	4,751	4,659	4,754	4,920	5,087	5,571	6,282	6,756
Morrow	7,388	7,270	7,353	7,784	7,262	7,200	7,342	7,561	8,412	8,485
Muskingum	8,903	9,204	8,938	8,967	9,374	9,739	10,075	10,627	11,084	11,594
Noble	4,583	4,602	4,256	4,048	4,183	4,183	4,532	4,626	5,220	6,452
Ottawa	5,395	5,683	5,156	5,413	5,265	5,255	5,333	5,428	5,498	5,504
Paulding	5,923	5,369	5,028	5,176	4,666	4,286	4,826	4,640	4,780	5,253
Perry	5,824	5,681	5,531	5,551	5,487	5,660	5,973	6,301	6,712	6,703
Pickaway	9,302	9,328	9,294	9,561	9,559	9,972	10,283	10,502	10,754	11,314
Pike	3,947	3,908	3,857	4,236	4,265	4,029	4,161	4,317	4,651	4,561
Portage	8,079	8,172	7,914	7,884	7,714	7,961	8,264	8,444	8,930	9,052
Preble	9,937	9,850	9,950	9,874	9,310	9,072	9,498	9,518	9,982	10,140
Putnam	8,953	8,572	8,209	8,151	8,470	8,483	8,566	8,821	9,141	9,115
Richland	8,935	8,909	8,838	8,594	8,698	8,671	8,715	9,030	9,474	9,991
Ross	10,255	9,982	9,990	10,522	10,477	10,934	11,347	12,152	12,730	12,722
Sandusky	8,686	8,376	7,984	8,434	8,430	8,825	8,292	9,182	9,008	9,518
Scioto	5,314	5,375	5,251	5,593	5,476	5,153	5,227	5,312	5,395	5,589
Seneca	9,207	9,202	8,788	9,145	8,971	9,083	9,505	9,386	10,068	10,477
Shelby	9,157	9,034	8,624	8,595	8,526	8,467	8,371	8,610	8,901	9,045
Stark	14,836	14,564	14,429	14,569	13,975	14,218	14,728	15,443	15,575	15,736
Summit	8,985	9,108	9,183	9,073	9,352	9,247	9,444	9,523	9,905	9,995
Trumbull	10,458	10,325	10,039	10,584	10,564	10,659	11,247	11,941	12,008	12,761
Tuscarawas	7,417	7,282	7,272	7,264	7,575	7,872	7,945	8,483	8,950	8,847
Union	8,190	8,023	7,692	7,630	7,277	7,408	7,546	7,704	8,557	8,915
Van Wert	8,184	8,748	8,345	8,250	7,789	8,571	8,370	8,901	8,962	9,383
Vinton	2,347	2,407	2,375	2,504	2,578	2,632	2,659	2,814	2,948	3,028

TABLE SHOWING THE NUMBER OF HORSES IN OHIO FOR TEN YEARS, INCLUDING CITIES AND RURAL DISTRICTS—Concluded.

Counties.	Number of Horses.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Warren	9,650	9,238	9,274	9,143	9,222	9,209	9,464	9,742	10,285	10,549
Washington	7,107	7,389	7,605	7,692	7,476	7,839	7,749	8,110	8,135	8,724
Wayne	11,911	11,500	11,068	10,821	10,888	11,115	11,165	11,217	11,685	12,283
Williams	6,579	6,489	6,105	6,256	6,377	6,277	6,192	6,672	7,346	7,629
Wood	10,808	11,744	10,874	11,256	10,933	11,731	11,640	11,159	11,107	11,514
Wyandot	7,407	7,534	7,339	7,150	6,971	6,962	7,227	7,216	7,641	8,092
Totals	725,024	716,558	712,500	711,146	704,165	717,734	735,050	759,482	795,967	824,840

TABLE SHOWING THE NUMBER OF CATTLE IN OHIO FOR TEN YEARS, INCLUDING CITIES AND RURAL DISTRICTS.

Counties.	Number of Cattle.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	10,615	10,432	10,603	10,384	9,716	9,114	7,852	8,354	8,575	7,506
Allen	17,614	15,799	14,861	15,177	13,640	13,224	12,345	12,151	12,779	12,358
Ashland	15,349	14,650	14,825	14,726	14,843	13,392	11,942	12,317	13,124	13,450
Ashtabula	32,201	28,882	30,024	28.448	27,478	26,726	23,961	23,855	24,886	24,704
Athens	10,370	11,070	10,320	11,217	12,099	11,218	9,761	9.175	10,836	13,078
Auglaize	17,168	16,232	15,901	15,224	14,587	13,224	12,692	13,265	14,705	13,920
Belmont	18,208	19,550	20,749	21,850	20,331	19,127	17,429	17,055	19,871	20,597
Brown	12,897	12,979	13,407	13,112	12,306	10,784	10,843	10,617	10,679	11,534
Butler	17,011	16,622	16,045	15,691	14,668	13,711	13,096	12.842	14,030	14,371
Carroll	13,654	12,941	18,009	13,248	12,785	11,814	10,961	11,067	12,226	13,483
Champaign	20,258	20,020	18,695	17,928	17,168	14,958	14,058	13.955	15,714	15,423
Clark	19,469	18,281	19,920	18,453	17,866	15,789	14,758	14,729	14,493	16,509
Clermont	10,435	10,657	9,761	10,567	9,500	9,081	8,950	9,624	10,310	11,097
Clinton	17,250	16,390	17,067	15,540	14,093	13,386	12,010	12,538	12,906	13,146
Columbiana	21,839	20,501	22,507	22,072	20,005	19,456	18,243	17,705	18,234	18,553
Coshocton	18,306	17,581	16,008	16,728	17,659	15,823	13,952	14,376	14,519	15,103
Crawford	17,080	16,532	16,933	17,348	16,018	15,229	14,370	14,353	14,592	14,349
Cuyahoga	16,615	16,247	16,322	16,631	16,142	15,768	15,642	15,293	15,571	15,635
Darke	26,928	25,889	24,319	23,039	22,213	20,591	19,041	19,694	20,887	21,125
Defiance	10,519	11,816	11,284	9,957	9,958	9,485	9,299	9,782	8,481	8,154
Delaware	21,196	19.133	17,362	16,669	15,929	15,766	13,710	13,283	14,429	14,779
Erie	8,418	7,911	7,902	7,873	6,934	7,223	7,057	6,800	6,980	6,152
Fairfield	22,346	21,930	20,766	21,365	19,474	17,210	16,400	16,793	19,073	19,811
Fayette	20,070	19,819	19,719	20,007	17,049	16,931	15,298	13,503	16,143	16,149
Franklin	21,037	20,767	19,672	18,662	18,427	17,587	17,459	16,972	19,846	19,414
Fulton	18,030	17,657	17,675	14,335	14,085	12,603	11,029	12,548	12,855	12,773
Gallia	11,491	11,741	13,179	11,956	11,900	10,328	8,812	9,237	10,324	11,201
Geauga	21,725	21,570	21,599	20,263	20,291	18,898	17,103	16,067	17,243	17,077
Greene	18,956	18,678	17,622	17,126	15,341	14,804	13,926	14,508	15,027	15,974
Guernsey	13,639	13,985	13,948	15,351	14,532	13,737	12,938	11,919	14,553	14,514
Hamilton	17,907	17,700	18,796	17,483	17,774	17,665	18,421	18,595	19,883	20,007

TABLE SHOWING THE NUMBER OF CATTLE IN OHIO FOR TEN YEARS, INCLUDING CITIES AND RURAL DISTRICTS—Concluded.

Counties.	Number of Cattle.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Hancock	24,472	23,179	22,154	22,223	20,698	19,716	18,429	18,689	19,086	18,917
Hardin	19,480	18,428	17,213	17,251	14,927	13,793	12,629	12,067	12,352	12,548
Harrison	11,415	11,222	12,204	12,035	11,934	11,497	10,642	9,944	11,335	12.225
Henry	15,427	14,675	14,173	12,895	12,111	11,191	11,388	11,380	17,712	10,926
Highland	20,462	20,189	19,921	18,774	16,577	15,639	14,401	14,514	16,282	16,261
Hocking	9,414	9,772	9,917	9,711	8,778	7,878	7,757	8,192	8,821	9,845
Holmes	17,978	17,862	17,108	18,241	17,486	15,455	13,234	13,980	16,767	16,855
Huron	15,685	15,214	14,326	14,779	14,224	13,026	12,063	12,435	12,648	12,343
Jackson	10,349	11,051	11,939	11,273	10,745	9,282	8,672	8,871	9,603	10,259
Jefferson	11,962	12,035	13,597	12,773	10,692	11,450	10,479	9,815	11,133	12,705
Knox	20,317	17,625	16,362	18,807	17,136	15,862	14,648	14,363	16,303	16,064
Lake	7,727	7,588	7,572	7,189	6,969	6,444	6,015	6,026	6,006	6,069
Lawrence	9,607	9,418	9,839	9,320	8,377	7,642	7,120	6,544	7,665	8,634
Licking	30,307	28,430	26,757	26,760	25,370	22,868	21,233	22,356	23,948	25,059
Logan	20,257	19,772	19,144	18,828	17,020	15,205	12,781	13.324	14.711	13,942
Lorain	23,903	23,163	23,410	22,139	21,185	20,138	20.262	19,107	10,182	15,996
Lucas	10,140	10,039	9,744	9,317	8,588	8,189	7,819	7,813	7,665	7,546
Madison	24,032	24,111	21,223	19,470	17,498	24,308	16,448	15,490	18,918	18,379
Mahoning	19,589	18,925	17,578	18,384	16,700	15,942	14,858	14,501	15,301	17,238
Marion	17,333	16,693	14,781	15,185	15,232	13,264	12,243	11,779	12,152	12,054
Medina	18,134	17,011	18,043	17,394	15,820	15,631	14,871	15,240	15,749	15,417
Meigs	10,010	10,696	11,277	10,748	10,778	10,280	9,159	8,912	10,893	12,021
Mercer	18,125	17,449	16,586	15,713	15,285	14,343	13,455	14,025	14,812	15,777
Miami	16,064	15,370	14,305	14,523	13,690	12.961	12,120	12,455	13,405	13.805
Monroe	12,203	12,570	14,040	12,460	13,115	11,866	10,440	9,786	12,843	13.985
Montgomery	20,915	21,289	20,540	19,791	19,444	18,376	16,048	17,048	18,618	18,567
Morgan	13,043	13,572	13,632	13,308	13,098	12,371	11,813	11,128	12,878	14,029
Morrow	15,837	15,017	14,106	15,035	14,847	13.285	11.782	11,562	12,434	11,965
Muskingum	24,525	25,389	24,663	24,316	24,002	22,494	22,069	21,863	23,786	25,151
Noble	14,581	14,834	13,904	14,312	14,206	12,613	11,436	10,400	12,774	13,303
Ottawa	9,040	9,155	9,008	8,792	7,968	7,491	7,396	7,634	7,669	17,598
Paulding	8,369	8,134	7,711	6,459	5,727	4,901	5,016	5,345	4,956	5,477
Perry	13,791	15,582	15,601	15,318	14,053	13,039	11,870	12,399	13,987	14,392

Pickaway	22,990	22,087	21,967	20,121	18,678	18,244	17,210	17,737	20,047	19,803
Pike	6,782	6,394	6,197	6,143	5,623	4,849	4,595	5,131	5,499	6,268
Portage	22,266	22,656	21,076	21,311	20,181	19,532	18,076	17,033	19,654	19,851
Preble	18,824	17,719	17,440	16,086	15,281	14,072	13,199	13,330	12,805	14,374
Putnam	19,704	18,788	17,194	16,822	16,118	14,304	13,267	13,531	13,221	13,804
Richland	18,817	17,985	17,281	17,095	16,063	15,039	13,291	13,903	14,863	14,974
Ross	22,299	22,662	21,793	21,124	19,197	17,482	16,918	16,916	18,972	19,285
Sandusky	15,800	15,396	13,491	14,289	18,362	12,977	11,205	12,386	12,807	12,897
Scioto	9,200	8,925	8,406	8,815	8,858	7,624	7,678	7,995	8,227	8,693
Seneca	19,292	17,063	16,203	17,133	15,206	14,215	15,100	15,483	16,052	15,327
Shelby	16,096	16,147	15,099	16,091	14,730	13,334	13,195	14,159	14,018	13,984
Stark	26,580	27,542	28,702	28,652	26,352	25,383	24,048	24,692	24,989	26,061
Summit	20,585	20,154	20,929	21,465	20,250	19,287	17,644	16,848	17,426	17,516
Trumbull	30,676	31,628	32,511	32,350	31,500	29,374	26,897	26,089	26,594	27,051
Tuscarawas	20,720	21,091	20,826	21,139	20,400	19,579	18,796	19,277	20,344	20,278
Union	17,738	17,596	14,834	15,222	14,014	12,540	11,182	11,069	12,953	12,754
Van Wert	13,127	13,672	12,648	12,198	11,278	10,684	9,413	10,522	10,919	10,852
Vinton	6,031	6,407	6,685	6,646	6,685	5,766	5,350	5,475	6,242	6,832
Warren	18,072	16,351	17,373	15,524	13,425	12,194	11,569	11,537	12,129	12,880
Washington	15,333	16,934	17,413	17,771	17,236	15,884	13,772	13,798	15,509	17,784
Wayne	25,500	25,210	25,480	25,352	24,960	22,730	20,615	20,720	21,435	21,392
Williams	14,454	14,136	13,530	12,244	12,461	11,259	10,122	11,009	11,020	10,845
Wood	20,948	20,874	20,044	17,909	17,498	14,730	15,807	14,974	15,788	15,473
Wyandot	14,826	14,348	13,091	14,200	13,304	11,440	11,191	10,403	10,757	10,534
Totals	1,509,754	1,481,586	1,458,391	1,427,661	1,351,251	1,265,664	1,174,094	1,175,475	1,252,888	1,296,106

TABLE SHOWING THE NUMBER OF MULES IN OHIO FOR TEN YEARS.

Counties.	Number of Mules.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	218	223	193	190	181	189	189	228	218	246
Allen	92	85	94	102	112	98	103	98	139	133
Ashland	83	79	78	66	55	54	56	58	78	83
Ashtabula	20	25	40	35	42	41	42	43	53	52
Athens	113	95	141	119	133	170	165	177	190	219
Auglaize	113	111	118	114	133	148	171	175	207	231
Belmont	428	368	440	374	313	370	375	386	382	383
Brown	274	229	201	199	209	213	210	238	291	825
Butler	521	433	404	472	450	453	482	537	649	823
Carroll	81	67	59	63	72	62	73	75	96	77
Champaign	222	219	151	169	148	143	153	164	175	175
Clark	375	276	232	201	190	299	211	213	207	217
Clermont	566	534	520	489	546	569	604	645	679	733
Clinton	380	344	288	296	310	822	328	354	362	340
Columbiana	103	73	71	62	66	85	77	87	128	191
Coshocton	166	139	128	159	159	111	103	110	110	143
Crawford	128	113	97	69	68	79	67	86	91	188
Cuyahoga	59	63	42	49	57	114	85	129	104	124
Darke	317	327	285	287	280	317	344	403	409	407
Defiance	58	70	71	59	59	75	82	87	96	107
Delaware	96	90	260	57	57	55	55	63	60	36
Erie	14	9	13	15	7	22	17	26	21	25
Fairfield	170	138	119	130	124	134	129	120	143	145
Fayette	269	267	197	174	166	152	179	198	260	224
Franklin	160	103	181	113	101	131	121	131	147	198
Fulton	30	30	33	27	30	24	18	30	40	45
Gallia	178	136	145	207	207	234	264	246	281	273
Geauga	24	35	29	26	30	32	39	55	48	62
Greene	263	230	188	183	172	173	191	191	240	226
Guernsey	277	234	201	190	237	219	240	191	183	154
Hamilton	1,017	1,014	1,242	1,112	1,107	1,271	1,359	1,448	1,572	1,899
Hancock	63	61	71	83	80	99	94	105	121	132
Hardin	95	72	77	88	88	101	129	155	161	200

Harrison	105	69	54	64	60	54	49	42	43	36
Henry	56	56	61	66	53	67	72	77	101	111
Highland	375	190	225	219	214	207	235	265	291	295
Hocking	78	60	62	49	58	53	61	87	85	119
Holmes	57	54	75	66	83	73	86	96	103	110
Huron	78	77	77	79	89	95	92	87	84	73
Jackson	768	762	855	836	820	830	795	808	784	782
Jefferson	364	237	163	186	255	195	188	180	196	213
Knox	126	124	109	114	116	115	110	111	117	121
Lake	13	8	14	5	9	13	15	26	30	43
Lawrence	491	537	519	546	491	494	515	545	635	656
Licking	143	147	112	101	112	100	116	126	115	145
Logan	103	89	79	81	74	84	71	72	108	95
Lorain	36	33	30	50	38	76	41	33	47	42
Lucas	64	73	51	98	116	137	144	118	125	134
Madison	302	210	191	225	240	254	234	239	268	284
Mahoning	97	81	78	77	84	104	75	86	98	83
Marion	169	167	137	186	123	114	131	124	143	141
Medina	155	107	116	107	93	125	116	137	236	142
Meigs	214	200	188	210	218	222	258	289	284	288
Mercer	128	126	125	120	119	132	122	143	162	171
Miami	289	276	211	233	249	234	242	240	280	309
Monroe	69	68	66	59	48	88	77	62	73	93
Montgomery	276	243	227	246	215	227	240	255	265	316
Morgan	26	38	38	41	45	52	49	52	53	66
Morrow	71	45	42	42	53	62	54	50	57	74
Muskingum	182	161	163	153	167	171	162	201	222	229
Noble	34	44	40	52	60	57	45	44	52	44
Ottawa	50	47	33	39	40	14	10	20	27	13
Paulding	65	64	59	48	29	41	42	50	54	80
Perry	122	150	110	106	95	100	116	115	124	123
Pickaway	347	304	301	281	311	280	273	287	301	304
Pike	177	172	169	190	195	203	207	253	246	267
Portage	77	101	86	70	98	91	97	93	70	72
Preble	346	413	339	320	271	255	237	240	228	229
Putnam	54	61	59	55	64	50	78	74	94	106
Richland	150	133	137	114	121	142	147	151	177	196
Ross	156	158	153	132	156	149	203	182	236	220
Sandusky	38	47	47	50	43	53	60	78	80	87
Scioto	528	571	571	603	641	631	774	787	842	912
Seneca	74	91	58	69	61	63	89	90	104	88
Shelby	115	119	80	87	81	89	98	110	124	131
Stark	369	361	329	351	331	327	310	356	372	400
Summit	95	208	99	97	105	88	94	72	90	89
Trumbull	82	58	92	94	159	98	57	65	68	59
Tuscarawas	229	219	144	118	159	113	130	125	130	142
Union	95	75	45	45	30	86	31	49	62	66
Van Wert	191	221	186	168	156	152	141	178	167	195
Vinton	112	106	101	97	101	106	117	146	144	178
Warren	388	381	378	397	403	389	383	407	475	505
Washington	143	158	177	191	178	171	164	183	192	188
Wayne	227	180	152	167	181	182	182	171	155	162

TABLE SHOWING THE NUMBER OF MULES IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Mules.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Williams	42	30	31	40	57	57	65	68	83	95
Wood	64	71	66	94	80	101	130	130	241	155
Wyandot	105	124	61	60	76	55	51	71	63	88
Totals	16,283	15,197	14,530	14,373	14,508	15,030	15,445	16,398	17,942	19,181

TABLE SHOWING NUMBER OF SHEEP IN OHIO FOR TEN YEARS.

Counties.	Number of Sheep.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	5,890	7,598	8,857	9,068	8,784	7,997	7,421	8,533	11,420	14,811
Allen	17,487	19,205	20,732	20,707	19,193	17,705	14,365	16,676	22,681	28,634
Ashland	34,314	36.243	37,308	36,876	36,114	32.885	27,790	28.266	36.075	43,368
Ashtabula	10,972	12,693	14,735	16,575	19,188	18,374	17,797	20,201	25,228	29,557
Athens	42,075	46,063	47,649	46,086	43,879	40.478	33,264	34,310	40.861	61,550
Auglaize	8,614	10,128	11,551	12,011	11,811	9,568	8.580	10.907	13,743	16,008
Belmont	65,923	72,968	84,037	84.760	76,542	72,991	60.906	62,292	89,370	107,751
Brown	7,139	9.579	12,327	12,814	12,315	12,225	9.579	9.611	11,910	13.249
Butler	7,232	7,586	9.471	9,980	10,687	7,482	5,745	7,721	10,252	12,202
Carroll	50,675	52,082	57.992	59.301	62,660	60,888	53.090	58.566	78,584	100,338
Champaign	17,991	21,929	29,264	23,475	22,419	23,873	23.322	21,431	31,666	32,268
Clark	20,003	22,440	29,095	23,829	28,602	27,449	26,699	27,624	28.653	43,572
Clermont	4,375	6,742	8.067	7,713	7,883	6,647	5,629	7,208	8,193	8,572
Clinton	16,996	22.404	25,313	25,787	24,605	25,474	19,615	23,751	28,848	32,537
Columbiana	26,758	30.127	35,700	36,361	36,622	36,705	30,962	33,974	43,214	55,475
Coshocton	72,661	74,752	75.909	77,362	81,371	78,952	71,824	75,820	94.376	110.135
Crawford	40,976	42.153	45,952	45,257	34,768	42,534	36,786	41,043	53.811	52,029
Cuyahoga	5,496	6,344	6,838	7,119	7,022	6,757	6,055	6,348	7,976	9,353
Darke	6,144	7,338	7,717	7,754	6,753	6,870	5,219	5,793	8.350	10,537
Defiance	14,724	15,996	15,973	14,494	14,071	13,056	10,926	12,063	14,064	15,131
Delaware	38,526	45,189	46,228	44,578	44,202	42,646	39,259	41,644	53,635	65,297
Erie	10,691	11,942	12,909	12,934	10,943	12,575	11,843	12,890	16,085	20,792
Fairfield	13,780	15.456	16,673	18,443	16,925	16,736	12,714	13,993	21,589	26,935
Fayette	9,710	11,333	13,296	13,555	14,537	13,117	11,285	13,498	20,952	23,212
Franklin	10,507	11,422	12,558	12,761	11,953	11,042	10,221	10,838	15,771	18,449
Fulton	16,952	19.898	23,345	21,126	21,644	20,278	19,490	20,473	24,754	33,618
Gallia	9.144	11,210	13,517	13,930	15,425	14,788	13,710	13.946	20,024	22,751
Geauga	7,018	9,577	10.936	12,056	14,287	14,956	14.508	14,709	18,257	22,438
Greene	15.642	18,548	20,321	18,665	18,188	16,860	14,547	18,342	22,953	24,819
Guernsey	61.659	67,245	72,855	74,621	74,087	69,769	60.533	63,368	88,459	102,831
Hamilton	1,992	2.518	2,673	2,139	2,590	2,183	2,083	2,620	3,289	3,657
Hancock	36,428	38,265	38,764	36,400	35,355	33,086	30,595	33,887	41,912	48,575
Hardin	31,798	33,553	34,503	36,006	33,192	32,848	27,339	30,873	43,532	46,782

TABLE SHOWING NUMBER OF SHEEP IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Sheep.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Harrison	94,425	96,304	103.812	104.134	103.803	100.162	89.339	92,134	121,599	140,840
Henry	7,748	8,156	9,060	8.722	8.628	8.787	7.438	8.318	10,914	14,174
Highland	14,690	19,975	25,466	25,591	23,817	21,075	17,770	18.693	23.300	27.510
Hocking	13,911	16,243	17,198	17,293	16.215	15,673	14,018	17.769	23,392	28.436
Holmes	23,705	25,190	29,802	31,245	30,336	27,926	23,737	25,198	34,027	41,146
Huron	47,172	52,417	57,582	53,312	53,931	53,508	46,985	46,321	54,170	60,977
Jackson	5,650	7,738	8,304	8,889	8,617	8,955	9,031	11,827	14,769	15.363
Jefferson	45,023	49,160	55.219	60,433	56,998	56,636	49,064	46,273	65,203	82.985
Knox	95,822	91,063	90.537	95,698	90,645	84,764	73,681	76,411	103,200	117.246
Lake	4,460	5,750	6.087	6,456	7,431	7,377	6,795	7,914	9,690	12.415
Lawrence	1,711	2,590	3,456	3,350	3,109	3,128	3,257	3,619	5.031	5,856
Licking	90,760	96,295	99.427	94.483	93,434	92,214	81.652	92,243	115,620	137,018
Logan	29,343	31,790	35,363	36,862	34.405	31,371	30,074	34,237	44,530	51,541
Lorain	18,774	22,914	25,437	26,753	27,280	24,447	21,677	25.019	30,668	36.711
Lucas	1,993	2,699	3.026	3.339	3,259	3,191	2,740	2,736	4,044	5,723
Madison	15,842	21,985	24,963	26,540	27,555	28,991	29,586	31,854	47,704	52,487
Mahoning	18,557	21,674	21,346	24,992	29,506	29,815	25,143	26,877	37,678	45,350
Marion	48,701	49.401	66,661	57,811	59,518	54,174	44,750	50,035	56,109	64,552
Medina	23,098	26,629	30,381	31,042	32,743	32,415	30,119	32,606	40,894	48,850
Meigs	22,593	26,627	29,923	30,263	30,244	28,357	25,956	27,775	38,698	45,853
Mercer	10,193	12,746	14,933	14,827	13,977	11,980	9,419	9,089	12,222	13,931
Miami	3,347	4,085	3,872	4,516	4,871	4,902	5,235	4,470	6,253	7,747
Monroe	9,326	13,420	16,397	17,735	17,826	16,441	12,536	14,230	25,833	35,320
Montgomery	2,500	3,096	3,097	3,216	3,058	3,128	2,635	3,535	5,194	6,043
Morgan	54,973	62,039	69,100	68,079	65,214	59,079	51,736	54,892	72,090	89,610
Morrow	72,400	62,114	66,165	66,318	63,701	60,362	53,120	54,854	72,902	84,894
Muskingum	82,556	85,691	92,223	89,319	88,069	83,589	75,836	82,945	105,392	120,122
Noble	48,434	56,170	57,012	56,668	53,167	45,822	41,233	40,047	61.070	75.938
Ottawa	4,918	5,174	5,370	4,991	5,265	5,148	4,822	6,014	7,977	9,641
Paulding	8,095	8,912	9,676	8,626	6,929	6,034	4,559	5,242	6,726	6,840
Perry	28,265	29,497	32,360	29,087	27,497	25,817	24,339	27,715	37,022	44,694
Pickaway	6,886	8,899	11,223	10,625	9,994	9,471	8,777	9,969	13,615	15,015

Pike	4,069	4,535	4,450	4,602	4,991	3,890	3,896	5,909	7,969	7,407
Portage	16,962	20,383	23,790	25,446	25,406	26,969	23,607	25,332	33,562	42,274
Preble	5,290	6,081	6,567	7,599	7,702	7,190	5,741	7,144	9,042	10,376
Putnam	10,979	12,670	13,316	13,408	12,452	10,384	8,759	10,280	13,133	15,130
Richland	39,248	39,780	42,859	41,787	42,352	39,912	32,842	34,266	47,051	54,017
Ross	9,004	10,205	12,196	11,785	12,254	12,277	11,220	11,387	17,885	20,312
Sandusky	15,195	17,107	15,923	16,079	17,294	19,095	14,014	16,783	20,375	24,317
Scioto	1,809	2,067	2,059	1,964	1,762	1,814	1,727	2,341	2,973	2,936
Seneca	35,498	37,416	35,708	36,001	33,581	32,726	30,827	32,004	39,655	43,258
Shelby	7,848	7,545	7,177	8,295	8,385	7,287	6,172	6,814	8,414	9,406
Stark	16,565	19,971	22,386	24,829	25,680	26,230	23,453	26,215	33,802	41,081
Summit	6,722	7,560	9,140	9,312	9,526	9,986	8,871	9,935	13,442	16,708
Trumbull	16,540	21,993	25,130	27,658	29,016	29,893	26,922	30,041	40,339	49,181
Tuscarawas	27,644	29,198	32,772	33,977	33,801	32,639	28,631	32,781	45,206	57,225
Union	32,485	38,553	43,180	44,732	42,011	43,616	36,150	37,895	53,698	56,814
Van Wert	11,674	13,833	15,236	14,962	14,083	13,338	9,273	10,595	13,045	14,667
Vinton	17,615	19,713	19,625	19,658	18,380	19,097	18,152	22,420	27,799	30,835
Warren	5,860	9,051	11,239	12,396	12,965	11,965	11,577	14,408	16,288	13,720
Washington	27,433	32,679	37,390	40,064	40,706	37,824	32,961	38,472	52,576	66.967
Wayne	19,521	23,210	25,570	24,770	26,481	25,571	21,573	22,823	29,808	35.424
Williams	25,877	29,046	28,056	25,589	28,043	24,466	21,521	22,376	26,639	30,746
Wood	14,642	18,528	19,500	16,657	17,745	17,586	19,478	20,374	24,816	30,752
Wyandot	62,773	60,595	65,940	66,852	59,986	56,245	56,475	59,462	68,026	75,078
Totals	2,127,451	2,331,078	2,546,772	2,544,070	2,512,761	2,404,558	2,123,624	2,293,686	3,004,636	3,555,182

TABLE SHOWING THE NUMBER OF HOGS IN OHIO FOR TEN YEARS.

Counties.	Number of Hogs.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Adams	10,478	8,269	8,621	10,346	12,243	14,202	10,908	11,600	10,591	9,362
Allen	23,354	26,238	24,351	23,449	23,517	26,638	20,352	25,017	21,937	20,661
Ashland	20,808	17,925	26,717	15,535	17,814	20,348	16,419	14,881	13,924	12,459
Ashtabula	5,465	4,915	4,031	3,661	4.684	5,072	5,547	5,993	5,475	4,209
Athens	2,954	2,855	2,978	3,444	3,837	4,900	4,715	4,360	4,525	4,277
Auglaize	22,407	25,091	25,759	25,531	25,107	28,210	22,982	22,524	22,433	20,287
Belmont	9,758	9,735	9,441	10,805	11,644	14,551	12,270	10,375	12,560	12,197
Brown	20,069	18,436	19,960	21,708	25,166	28,527	22,370	21,867	19,063	16,380
Butler	21,780	24.417	22,381	20,758	21,164	25,868	19,288	18,642	19,947	18,915
Carroll	9,102	8,727	7,680	8,276	9,805	10,142	10,139	8,316	9,423	8,514
Champaign	34,498	33,409	31,758	29,921	27,768	34,408	25,025	22,837	25,723	22,798
Clark	25,059	24,056	22,888	26,571	26,786	29,464	22,947	21,225	23,738	20,297
Clermont	14,549	15,012	15,667	16,014	17,946	20,921	16,521	14,597	13,094	13,062
Clinton	37,210	38,230	40,795	38,493	33,538	37,957	32,183	29,279	25,734	27,836
Columbiana	11,927	11,359	10,642	11,376	11,511	12,920	11,433	11,175	11,711	11,060
Coshocton	15,736	14,056	11,338	13,022	15,525	17,151	15,686	13,897	14,580	11,857
Crawford	30,261	32,416	29,198	28,801	27,651	34,786	32,509	27,992	25,244	21,542
Cuyahoga	2,794	2,526	1,903	2,047	2,176	2,627	2,662	3,160	2,728	2,417
Darke	39,670	38,755	35,686	34,228	33,879	42,210	34,423	33,085	31,446	27,923
Defiance	15,360	14,933	14,494	13,747	13,309	16,233	11,411	14,229	12,109	10,921
Delaware	24,420	24,887	22,944	21,726	23,346	26,111	21,128	18,517	20,199	15,773
Erie	7,235	7,410	6,474	6,080	4,021	8,205	8,023	8,471	7,498	6,784
Fairfield	31,158	31,248	33,755	37,733	38,008	41,284	30,043	26,493	28,287	28,392
Fayette	29,967	33,234	37,185	36,132	32,067	41,369	31,705	32.360	27,504	32,639
Franklin	22,138	22,735	22,747	27,162	28,276	29,743	22,639	22,814	26,376	23,596
Fulton	21,298	22,133	19,773	16,711	17,321	21,821	17,300	19,793	18,250	14,627
Gallia	5,454	5,512	6,803	6,540	7,387	9,020	7,480	7,678	7,548	6,938
Geauga	4,368	4,433	3,532	3,326	4,404	4,731	4,076	4,322	3,763	3,073
Greene	30.099	27.736	25.211	25,768	29,709	32,456	21,569	22,009	25,650	24,084
Guernsey	6,826	6,138	5,686	6,497	7,038	9,630	9,100	7,976	9,083	7,218
Hamilton	9,865	10,307	10,521	11,060	12,039	11,884	10,800	10,278	11,398	11,239

Hancock	33,075	33,971	31,449	34,126	37,999	43,340	30,747	31,991	34,148	77,830
Hardin	31,859	31,932	28,904	29,292	25,070	31,491	24,798	22,737	28,395	20,019
Harrison	6,209	5,959	5,010	5,307	6,150	7,741	7,148	6,180	6,778	6,683
Henry	18,494	17,962	17,871	19,022	18,298	17,240	16,778	15,928	18,015	15,268
Highland	32,731	34,104	34,570	33,435	33,687	27,277	29,757	31,145	28,711	25,315
Hocking	5,643	5,260	6,265	5,942	5,967	6,937	6,169	6,647	6,114	5,657
Holmes	22,529	20,669	18,905	18,486	20,049	22,716	20,343	16,146	18,294	16,586
Huron	15,649	14,677	10,913	11,196	13,051	15,701	13,629	12,358	12,015	9,923
Jackson	3,557	3,456	3,743	3,921	4,542	5,411	4,600	4,613	4,446	4,086
Jefferson	6,093	5,625	5,120	6,762	6,836	8,488	8,062	6,694	7,364	7,292
Knox	24,363	20,511	17,249	18,794	21,351	25,911	23,111	18,344	19,121	15,956
Lake	2,031	1,580	1,453	1,295	1,606	1,840	1,774	1,955	1,612	1,336
Lawrence	4,505	3,471	4,036	4,549	4,947	5,478	4,791	4,651	5,116	4,842
Licking	30,896	29,162	27,622	31,544	34,194	38,247	30,425	26,500	29,054	24,851
Logan	30,840	29,538	27,753	26,993	26,795	31,345	23,835	20,246	21,919	17,662
Lorain	9,433	8,401	7,123	6,434	7,799	8,955	7,893	8,128	8,372	6,695
Lucas	9,097	8,176	7,799	7,020	7,369	9,169	7,688	6,054	7,646	5,988
Madison	36,882	35,342	37,220	34,730	34,543	39,594	32,549	26,147	30,443	30,250
Mahoning	8,305	7,685	6,963	7,423	7,747	9,087	8,373	7,507	8,227	7,407
Marion	30,518	39,278	23,999	24,114	21,406	26,489	23,395	21,786	25,192	19,666
Medina	11,072	10,948	9,156	7,994	9,667	11,101	9,479	8,932	9,278	7,136
Meigs	3,180	3,211	3,433	4,094	4,733	5,882	5,205	4,795	5,584	4,766
Mercer	26,858	27,107	25,618	22,584	27,533	31,420	26,462	27,212	28,391	25,420
Miami	18,233	17,891	14,785	16,737	19,122	21,269	14,318	15,631	15,487	14,160
Monroe	5,927	4,779	5,369	5,964	5,469	7,119	6,605	5,344	6,480	6,443
Montgomery	22,406	22,094	19,609	20,740	21,663	23,871	17,230	20,618	20,873	19,402
Morgan	5,031	4,667	4,550	4,552	5,272	7,440	6,525	5,874	7,379	6,234
Morrow	16,282	14,772	14,031	14,156	16,239	18,806	16,357	13,457	12,942	10,203
Muskingum	12,277	11,442	11,041	11,578	13,518	16,087	14,817	13,390	14,379	13,148
Noble	7,459	6,711	5,810	6,733	7,743	10,191	8,684	7,417	8,047	7,467
Ottawa	8,070	8,444	6,958	7,499	9,885	10,917	10,492	9,335	9,769	8,942
Paulding	11,643	11,382	11,149	11,824	8,802	10,049	8,009	10,488	8,896	6,439
Perry	9,589	9,037	8,748	9,201	10,692	12,267	10,243	9,269	10,003	8,736
Pickaway	26,068	26,627	28,331	30,706	29,475	30,628	20,297	27,742	30,124	27,355
Pike	7,165	6,287	5,771	6,795	7,417	8,877	6,680	6,828	7,767	6,588
Portage	7,553	7,301	6,016	6,123	7,614	8,675	7,409	7,821	7,809	6,774
Preble	29,481	30,655	30,295	27,858	31,056	33,693	21,983	23,880	25,837	22,284
Putnam	28,801	38,567	37,319	35,974	34,399	35,755	31,582	33,347	33,019	26,880
Richland	25,275	23,770	20,916	19,451	21,348	25,656	21,619	20,097	19,459	17,584
Ross	25,215	24,744	24,698	26,006	24,136	36,408	21,579	24,892	27,029	26,076
Sandusky	15,188	16,178	11,820	20,839	23,541	28,559	22,255	22,233	22,345	20,258
Scioto	7,512	6,041	5,806	7,420	8,347	7,677	6,992	8,289	7,400	6,537
Seneca	28,913	28,034	22,680	27,644	34,403	40,672	34,654	33,435	31,318	27,654
Shelby	16,412	19,769	18,055	18,815	20,432	26,208	20,320	18,974	19,184	16,888
Stark	22,993	23,199	21,328	21,685	22,508	26,841	24,276	22,611	22,489	22,068
Summit	9,690	9,391	8,213	7,786	9,294	11,056	9,689	9,028	9,281	8,121
Trumbull	6,276	6,245	6,008	5,519	6,579	6,958	6,593	7,800	6,968	5,453
Tuscarawas	13,083	13,070	11,812	12,450	13,477	17,004	15,729	14,859	14,183	13,488
Union	34,069	33,642	29,275	29,010	25,952	28,953	21,977	21,239	22,949	20,669
Van Wert	23,198	23,021	24,339	25,051	22,973	24,963	16,393	22,469	24,872	21,173
Vinton	2,214	2,111	2,097	2,248	3,393	3,324	3,324	3,254	2,930	2,398

TABLE SHOWING THE NUMBER OF HOGS IN OHIO FOR TEN YEARS—Concluded.

Counties.	Number of Hogs.									
	1903.	1902.	1901.	1900.	1899.	1898.	1897.	1896.	1895.	1894.
Warren	20,433	27,501	21,948	22,537	23,562	28,459	18,649	16,526	20,165	18,611
Washington	6,221	6,073	6,382	6,870	7,608	9,808	7,838	7,739	8,767	8,301
Wayne	27,953	26,695	25,329	24,135	27,255	31,690	27,454	22,709	23,814	20,307
Williams	22,834	23,281	20,689	19,455	16,949	19,888	17,891	19,130	17,194	13,314
Wood	31,178	30,621	29,371	32,500	34,026	37,612	29.694	26,397	25,162	20.653
Wyandot	29,148	27,240	23,692	23,132	25,378	27,400	26,155	23,678	23,980	18,754
Totals	1,553,676	1,556,435	1,467,331	1,489,518	1,549,552	1,794,014	1,455,247	1,407,758	1,437,450	1,331,169

ABSTRACTS FROM REPORTS OF COUNTY AGRICULTURAL SOCIETIES FOR 1903

TABLE I—COUNTY FAIRS IN OHIO FOR 1903.

County.	President.	Postoffice.	Treasurer.	Postoffice.
Adams	W. S. Kincaid	West Union	H. W. Dickinson	West Union.
Allen	John Amstutz	Bluffton	George R. Fetter	Lima.
Ashtabula	G. S. Harvey	Rock Creek	A. W. Frayer	Jefferson.
Athens	A. P. Linscott	Athens	Winfield Scott	Athens.
Auglaize	J. T. Van Horn	New Hampshire	T. E. Bowsher	Buckland.
Belmont	John Sidebottom	St. Clairsville	E. G. Amos	St. Clairsville.
Brown	V. K. Thompson	Georgetown	B. M. Marshall	Georgetown.
Butler	J. A. Slade	Hamilton, R. R. No. 3	W. B. Wallace	Oxford.
Carroll	D. N. George	Scroggsfield	T. J. Saltsman	Carrollton.
Champaign	C. H. Ganson	Urbana	H. P. Wilson	Urbana.
Clark	C. W. Minnich	Mad River	T. L. Calvert	Selma.
Clermont	George Smysor	Belfast	J. O. Rapp	Owensville.
Columbiana	J. C. Billingsley	Negley	F. G. Bowman	Elkton.
Coshocton	R. A. Given	West Lafayette	W. B. Miller	Coshocton.
Crawford	J. W. Stuckman	Bucyrus	M. Auck	Bucyrus.
West Cuyahoga	William Biddulph	Dover	W. J. Poots	Vigil.
East Cuyahoga	E. C. Foote	Warrensville	F. Bradley	Chagrin Falls.
Darke	J. M. Brown	Arcanum	Ed. Ammon	Gordon.
Delaware	S. H. Cleveland	Delaware	Lewis Slack	Delaware.
Erie	C. F. Steen	Sandusky	Geo. J. Doerzbach	Sandusky.
Fairfield	Felix Swope	Amanda	C. B. Whiley	Lancaster.
Fulton	A. F. Shaffer	Wauseon	G. W. Howard	Wauseon.
Geauga	L. G. Richards	Auburn	H. C. Tuttle	Burton.
Greene	C. M. Austin	Bellbrook	H. L. Smith	Xenia.
Guernsey	A. J. Clark	Cambridge	R. S. Frame	Washington.
Hamilton	Frank Fox	Cincinnati	Wm. J. Bonnell	Miamiville.
Hancock	Mose McAnnelly	Findlay	Jacob Stark	Findlay.
Hardin	J. M. Fisher	Ridgeway	T. P. Evans	Kenton.
Harrison	W. V. Scott	Hopedale	W. W. Potts	Cadiz.
Holmes	William Duncan	Killbuck	P. G. Palmer	Millersburg.
Jefferson	A. U. Moore	Smithfield	Chas. McKinney	Smithfield.
Knox	Geo. D. Neal	Mt. Vernon	Geo. D. Neal	Mt. Vernon.
Lawrence	J. A. Bowen	Labelle	E. J. Smith	Proctorville.
Licking	T. M. Payne	Johnstown	B. N. Sigler	Homer.
Logan	D. M. Kaylor	Bellefontaine	W. R. Niven	Bellefontaine.

TABLE I—COUNTY FAIRS IN OHIO FOR 1908—Concluded.

County.	President.	Postoffice.	Treasurer.	Postoffice.
Lorain	I. A. Freeman	LaGrange	H. C. Wilcox	Elyria.
Madison	L. W. Kilgore	London	M. L. Rea	London.
Mahoning	North Newton	Boardman	C. C. Fowler	Canfield.
Marion	G. W. Hinaman	Marion	C. B. Jenkins	Marion.
Medina	I. H. Kennedy	Medina	C. E. Hoover	Medina.
Meigs	P. B. Stanbery	Pomeroy	John McQuigg	Pomeroy.
Mercer	C. F. Kruger	Celina, R. R. No. 4	Wm. H. Romer	St. Henry.
Miami	W. F. Robbins	Piqua	D. M. Coppock	Troy.
Monroe	W. C. Mooney	Woodsfield	W. C. Mooney	Woodsfield.
Montgomery	S. D. Bear	Dayton	Alonzo Michael	Alexandersville.
Morgan	Robert L. Evans	Meigs	Harry M. Finley	McConnelsville.
Morrow	J. M. Farley	Edison	J. G. Russell	Mt. Gilead.
Muskingum	Geo. K. Browning	Zanesville	A. F. Vest	Zanesville.
Noble	C. W. Pettay	Sarahsville	C. L. Hellyer	Sarahsville.
Paulding	Allen Bybee	Paulding	John W. Zuber	Paulding.
Perry	T. J. Tracy	New Lexington	Pat Coyle	New Lexington.
Pike	W. A. Russell	Beaver	G. W. Baker	Beaver.
Portage	C. R. Doolittle	Kent	George F. Douthitt	Ravenna.
Preble	John Kaylor	Eaton	C. F. Brooke, Jr.	Eaton.
Putnam	A. L. Paul	Ottawa	Sam Cartwright	Ottawa.
Richland	W. H. Shyrock	Mansfield, R. R. No. 8	John Hale	Mansfield, R. R. 3.
Sandusky	L. Nickel	Fremont	Wm. A. Gabel	Fremont.
Scioto	D. T. Blackburn	Rarden	W. A. McGeorge	Mt. Joy.
Seneca	J. H. Knapp	Republic	E. T. Umsted	Tiffin.
Shelby	J. C. Royon	Houston	John Duncan	Sidney.
Stark	J. J. Snyder	Paris	Henry A. Wise	Canton.
Summit	David J. Thomas	Cuyahoga Falls	Geo. W. Brewster	Akron.
Trumbull	Albert Brown	Warren	R. W. Elliott	Warren.
Tuscarawas	Samuel Toomey	Canal Dover	A. C. Ruff	Canal Dover.
Union	Thomas F. Lockwood	Raymond	C. S. Chapman	Marysville.
Van Wert	Dr. B. F. Leslie	Convoy	E. B. Gilliland	Van Wert.
Warren	Edmond Stewart	Lebanon	Huse Bone	Lebanon.
Washington	Hiram True	Warner	Chas. W. Zimmer	Stanleyville.
Wayne	John C. McClaran	Wooster	W. A. Wilson	Wooster.
Williams	C. R. Betts	Stryker	C. A. Fyke	Kunkle.
Wood	W. H. Hannah	Tontogany	Hugh Stewart	Dunbridge.
Wyandot	Z. T. Smith	Upper Sandusky	Peter Frank, Jr.	Upper Sandusky.

COUNTY FAIRS IN OHIO FOR 1908, WITH TIME AND PLACE.

County.	Secretary.	Postoffice.	Time of Fair.	Place of Fair.
Adams	T. W. Ellison	West Union	Sept. 8, 9, 10 and 11	West Union.
Allen	T. B. Bowersock	Lima	Sept. 15, 16, 17, 18 and 19	Lima.
Ashtabula	Chas. C. Babcock	Jefferson	Aug. 18, 19 and 20	Jefferson.
Athens	H. H. Haning	Athens	Aug. 25, 26 and 27	Athens.
Auglaize	A. E. Schaffer	Wapakoneta	Sept. 29, 30 and Oct. 1, 2, 3.	Wapakoneta.
Belmont	Chas. B. Ryan	St. Clairsville	Aug. 26, 27 and 28	St. Clairsville.
Brown	J. W. Hedrick	Russellville	Oct. 6, 7, 8 and 9	Georgetown.
Butler	L. M. Larsh	Hamilton	Oct. 6, 7, 8 and 9	Hamilton.
Carroll	C. A. Tope	Carrollton	Oct. 6, 7, 8 and 9	Carrollton.
Champaign	J. W. Crowl	Urbana	Aug. 11, 12, 13 and 14	Urbana.
Clark	S. Van Bird	Springfield	Aug. 18, 19, 20 and 21	Springfield.
Clermont	John Rowan	Blowville	Aug. 25, 26, 27 and 28	Boston (Owensville P. O.).
Columbiana	E. F. Moore	Lisbon	Sept. 15, 16 and 17	Lisbon.
Coshocton	Robert Boyd	Coshocton	Oct. 6, 7, 8 and 9	Coshocton.
Crawford	G. W. Miller	Bucyrus	Oct. 6, 7, 8 and 9	Bucyrus.
West Cuyahoga	O. R. Stone	Berea	Sept. 15, 16 and 17	Berea.
East Cuyahoga	F. C. Gates	Chagrin Falls	Sept. 8, 9, 10 and 11	Chagrin Falls.
Darke	O. E. Harrison	Greenville	Aug. 24, 25, 26. 27 and 28	Greenville.
Delaware	W. S. Pollock	Delaware	Sept. 15, 16, 17 and 18	Delaware.
Erie	F. H. Zerbe	Sandusky	Sept. 15, 16, 17 and 18	Sandusky.
Fairfield	W. T. McClenaghan	Lancaster	Oct. 14, 15, 16 and 17	Lancaster.
Fulton	Thomas Mikesell	Wauseon	Sept. 15, 16, 17 and 18	Wauseon.
Geauga	W. S. Ford	Burton	Sept. 15, 16, 17 and 18	Burton.
Greene	R. R. Grieve	Xenia	Aug. 4, 5, 6 and 7	Xenia.
Guernsey	J. F. St. Clair	Washington	Sept. 29, 30 and Oct. 1, 2	Washington.
Hamilton	D. L. Sampson	Silverton	Aug. 18, 19, 20 and 21	Oakley.
Hancock	Wm. Demland	Findlay	Sept. 30 and Oct. 1, 2 and 3.	Findlay.
Hardin	J. R. Smith	Kenton	Aug. 25, 26, 27, and 28	Kenton.
Harrison	E. B. Kirby	Cadiz	Sept. 29, 30 and Oct. 1, 2	Cadiz.
Holmes	P. G. Palmer	Millersburg	Oct. 14, 15, 16 and 17	Millersburg.
Jefferson	J. O. Hayne	Smithfield	Sept. 23, 24 and 25	Smithfield.
Knox	Isaac Errett	Mt. Vernon	Sept. 16, 17, 18 and 19	Mt. Vernon.
Lawrence	C. W. Kitts	Proctorville	Sept. 9, 10 and 11	Proctorville.
Licking	J. M. Farmer	Newark	Sept. 29, 30, and Oct. 1. 2	Newark.
Logan	E. P. Chamberlain	Bellefontaine	Aug. 18, 19, 20 and 21	Bellefontaine.
Lorain	Anthony Nieding	Elyria	Sept. 8, 9, 10 and 11	Elyria.
Madison	E. B. Pancake	London	Aug. 25, 26, 27 and 28	London.
Mahoning	B. L. Manchester	Salem	Sept. 22, 23 and 24	Canfield.
Marion	J. A. Knapp	Marion	Sept. 22, 23, 24 and 25	Marion.
Medina	Frank Spellman	Medina	Sept. 1, 2 and 3	Medina.
Meigs	A. V. Howell	Pomeroy	Sept. 9, 10 and 11	Pomeroy.

COUNTY FAIRS IN OHIO FOR 1903, WITH TIME AND PLACE—Concluded.

County.	Secretary.	Postoffice.	Time of Fair.	Place of Fair.
Mercer	Fred Helby	Ft. Recovery	**Aug.** 17, 18, 19, 20 and 21	**Celina.**
Miami	W. I. Tenney	Troy	**Sept.** 21, 22, 23, 24 and 25	**Troy.**
Monroe	Geo. P. Dorr	Woodsfield	**Sept.** 1, 2 and 3	**Woodsfield.**
Montgomery	W. J. Ferguson	Dayton	**Sept.** 7, 8, 9, 10 and 11	**Dayton.**
Morgan	John A. Floyd	Meigsville	**Sept.** 29, 30 and Oct. 1	**McConnelsville.**
Morrow	G. J. Smith	Mt. Gilead	**Sept.** 29, 30, and Oct. 1, 2	**Mt. Gilead.**
Muskingum	R. Y. White	Chandlersville	**Sept.** 8, 9, 10 and 11	**Zanesville.**
Noble	Geo. M. Graham	Sarahsville	**Sept.** 16, 17 and 18	**Sarahsville.**
Paulding	W. B. Jackson	Paulding	**Sept.** 1, 2, 3 and 4	**Paulding.**
Perry	Chas. C. Chappelear	New Lexington	**Sept.** 16, 17 and 18	**New Lexington.**
Pike	A. H. Wilkeing	Beaver	**Sept.** 8, 9 and 10	**Beaver.**
Portage	Lafayette Smith	Ravenna	**Aug.** 26, 27 and 28	**Ravenna.**
Preble	Henry H. Farr	Eaton	**Sept.** 14, 15, 16, 17 and 18	**Eaton.**
Putnam	A. P. Sandles	Ottawa	**Oct.** 6, 7, 8, 9 and 10	**Ottawa.**
Richland	John H. Coss	Mansfield	**Sept.** 9, 10, 11 and 12	**Mansfield.**
Sandusky	A. W. Overmyer	Fremont	**Oct.** 6, 7, 8 and 9	**Fremont.**
Scioto	W. A. McGeorge	Mt. Joy	**Aug.** 25, 26, 27 and 28	**Mt. Joy.**
Seneca	M. E. Ink	Republic	**Sept.** 8, 9, 10 and 11	**Tiffin.**
Shelby	J. E. Russell	Sidney	**Sept.** 8, 9, 10 and 11	**Sidney.**
Stark	J. H. Lehman	Canton	**Sept.** 15, 16, 17 and 18	**Canton.**
Summit	O. J. Swinehart	East Akron	**Sept.** 29, 30 and Oct. 1, 2	**Akron.**
Trumbull	Jas. L. Kennedy	Warren	**Sept.** 1, 2 and 3	**Warren.**
Tuscarawas	J. S. Karns	Canal Dover	**Oct.** 13, 14, 15 and 16	**Canal Dover.**
Union	W. M. Titsworth	Marysville	**Sept.** 29, 30 and Oct. 1, 2	**Marysville.**
Van Wert	J. F. Longworth	Van Wert	**Sept.** 8, 9, 10 and 11	**Van Wert.**
Warren	Geo. W. Carey	Lebanon	**Sept.** 22, 23, 24 and 25	**Lebanon.**
Washington	Edward Best	Marietta, Box 447	**Sept.** 1, 2, 3 and 4	**Marietta.**
Wayne	G. J. Ebright	Shreve	**Sept.** 30 and Oct. 1 and 2	**Wooster.**
Williams	C. C. Lattanner	Montpelier	**Sept.** 8, 9, 10 11 and 12	**Montpelier.**
Wood	J. B. Newton	Bowling Green	**Sept.** 22, 23, 24, 25 and 26	**Bowling Green.**
Wyandot	C. F. Smith	Upper Sandusky	**Sept.** 29, 30 and Oct. 1, 2	**Upper Sandusky.**

TABLE II—ENTRIES AND AWARDS.

Counties.	Horses—All breeds and classes except speed.			Speed Horses.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	189	$520 00	$411 00	39	$202 00	$202 00
Allen	58	506 00	184 00	138	3,350 00	1,472 00
Ashtabula	82	336 00	181 00	58	1,500 00	1,500 00
Athens	73	370 00	136 00	28	2,000 00	1,005 00
Auglaize	147	460 00	327 00	....	2,800 00	2,030 60
Belmont	94	259 50	140 00	....	550 00	550 00
Brown	294	597 00	555 00	9	60 00	60 00
Butler	381	747 00	657 00	139	3,900 00	3,145 00
Carroll	154	357 00	253 00	70	1,220 00	1,075 00
Champaign	207	398 00	305 00	122	2,700 00	2,694 48
Clark	154	659 00	461 00	96	3,200 00	3,245 00
Clermont	281	672 00	606 00	18	420 00	420 00
Columbiana	122	415 00	311 00	47	1,000 00	750 00
Coshocton	165	863 50	582 50	77	2,550 00	1,904 00
Crawford	90	433 00	245 00	50	1,600 00	1,036 00
East Cuyahoga	118	284 50	204 00	47	1,400 00	1,008 75
West Cuyahoga	106	277 00	138 50	37	1,500 00	650 00
Darke	234	935 00	649 00	126	3,700 00	2,789 50
Erie	81	450 00	221 50	87	1,700 00	870 00
Fairfield	266	568 00	533 00	43	2,350 00	2,270 00
Fulton	105	489 00	270 00	27	1,000 00	654 50
Geauga	144	427 75	165 00	31	1,200 00	....
Greene	91	330 00	283 00	142	1,950 00	1,950 00
Guernsey	104	380 00	293 00	22	675 00	654 31
Hamilton	469	792 50	776 00	....	3,600 00	3,500 00
Hancock	111	1,042 50	366 00	86	3,000 00	2,251 25
Hardin	84	625 00	254 00	89	2,050 00	1,560 00
Harrison	141	272 00	192 00	20	800 00	640 00
Holmes	26	287 00	32 00	50	1,250 00	937 37
Jefferson	121	425 00	425 00	35	1,000 00	1,000 00
Knox	16	303 00	13 50	....	1,400 00	1,250 00
Lawrence	37	147 00	66 50	10	205 00	205 00
Licking	128	556 00	477 00	48	2,800 00	2,105 00
Logan	212	550 00	485 00	114	2,370 00	2,370 00
Lorain	....	400 00	249 70	....	1,325 00	950 00
Madison	201	614 50	445 00	108	2,700 00	2,575 00
Mahoning	118	447 00	262 00	90	1,550 00	1,550 00
Marion	211	626 00	413 00	64	1,450 00	1,370 00
Medina	199	483 25	331 75	37	900 00	805 00
Meigs	89	385 00	256 00	....	1,410 00	883 00
Mercer	323	2,114 00	906 00	54	2,500 00	2,003 00
Miami	226	996 00	760 00	184	3,050 00	3,050 00
Monroe	50	285 00	157 00	38	1,200 00	1,030 00
Montgomery	220	823 00	528 50	86	5,000 00	4,600 00
Morgan	....	273 00	116 00	....	575 00	337 00
Morrow	148	621 00	422 00	....	1,550 00	1,153 00
Muskingum	186	516 00	411 00	53	2,000 00	1,620 00
Noble	63	335 00	145 25	12	300 00	300 00
Paulding	82	401 00	193 00	66	1,475 00	1,420 00

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Horses—All breeds and classes except speed.			Speed Horses.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry	55	$293 00	$152 00	26	$1,450 00	$745 00
Pike	45	234 50	131 50	29	745 00	695 00
Portage	68	337 00	162 50	45	1,400 00	....
Preble	306	707 00	549 00	124	2,500 00	970 00
Putnam	146	1,056 00	555 50	96	2,508 00	2,508 00
Richland	122	374 00	191 20	....	2,050 00	1,075 00
Sandusky	215	950 00	513 00	53	2,000 00	1,539 25
Scioto	47	244 50	198 50	23	595 00	385 00
Seneca	81	473 00	207 00	38	1,150 00	870 00
Shelby	139	476 00	326 00	54	3,025 00	3,023 40
Stark	141	747 00	535 80	41	1,500 00	1,500 00
Summit	182	642 00	506 50	77	2,400 00	2,325 00
Trumbull	78	219 00	181 00	91	1,750 00	1,680 00
Tuscarawas	25	177 00	65 00	45	1,700 00	1,275 00
Union	127	471 00	400 07	77	2,300 00	1,805 00
Van Wert	152	1,141 00	507 00	85	3,000 00	2,079 50
Warren	138	416 00	385 00	113	1,525 00	1,490 00
Washington	43	312 00	157 00	87	2,700 00	1,411 50
Wayne	60	411 00	184 50	40	1,500 00	1,500 00
Williams	133	440 00	223 00	89	1,800 00	1,292 19
Wood	119	821 50	539 00	153	6,200 00	6,200 00
Wyandot	86	294 00	167 00	22	1,200 00	918 00
Total	9,709	$37,290 50	$23,631 77	4,105	$132,985 00	$106,687 60

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Cattle—All breeds and classes.			Sheep—All breeds and classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	36	$244 00	$163 00	15	$57 00	$36 00
Allen	57	453 00	137 00	115	212 00	147 00
Ashtabula	107	436 00	254 00	132	258 00	218 00
Athens	32	225 00	85 00	49	118 00	72 00
Auglaize	47	304 00	196 00	37	193 00	87 00
Belmont	26	251 00	42 00	36	191 00	74 00
Brown	60	270 00	220 00	42	145 00	145 00
Butler	77	612 00	396 90	97	306 00	275 40
Carroll	51	340 00	166 00	50	168 00	116 00
Champaign	66	410 00	156 00	246	340 00	328 00
Clark	177	810 00	570 00	135	334 00	286 00
Clermont	60	292 00	189 00	60	216 00	182 00
Columbiana	45	434 00	165 00	25	239 00	64 00
Coshocton	201	908 00	714 00	235	539 00	438 00
Crawford	46	288 00	149 00	82	259 00	170 00
East Cuyahoga	65	435 50	108 50	67	269 75	103 00
West Cuyahoga	97	474 75	218 25	91	154 25	134 25
Darke	202	813 00	610 20	158	324 00	276 20
Erie	36	440 00	92 00	21	132 00	33 00
Fairfield	51	455 00	273 00	218	417 00	417 00
Fulton	94	478 50	258 50	162	187 50	176 00
Geauga	112	560 00	274 00	105	381 50	258 00
Greene	139	582 00	447 00	141	303 00	303 00
Guernsey	85	425 00	420 00	56	158 00	147 00
Hamilton	92	600 00	456 00	97	216 00	205 50
Hancock	96	492 00	282 50	153	296 00	237 00
Hardin	70	266 00	195 00	93	194 00	180 00
Harrison	46	172 00	117 00	58	116 00	96 00
Holmes	3	97 50	5 50	......	......	105 00
Jefferson	63	330 00	330 00	53	150 00	150 00
Knox	......	115 50	......	......	116 00	......
Lawrence	26	129 00	75 00	......	28 00	......
Licking	54	494 00	236 00	123	334 00	299 00
Logan	107	300 00	248 00	90	180 00	155 00
Lorain	......	350 00	291 00	......	300 00	144 00
Madison	126	499 00	331 50	95	255 00	214 50
Mahoning	73	387 00	260 00	73	183 00	130 50
Marion	139	466 00	224 00	89	264 00	236 00
Medina	80	383 25	223 25	121	231 00	193 00
Meigs	61	185 00	160 00	33	90 00	79 00
Mercer	150	976 00	423 00	141	465 00	302 00
Miami	106	942 00	406 00	123	252 00	245 00
Monroe	23	138 00	57 00	17	190 00	67 00
Montgomery	201	939 00	783 00	111	390 00	390 00
Morgan	......	270 00	44 00	......	88 00	66 00
Morrow	60	313 00	164 00	79	206 00	143 00
Muskingum	98	624 00	307 00	53	196 00	107 00
Noble	30	129 00	65 00	14	76 00	23 00
Paulding	52	387 00	159 00	65	155 00	70 00

TABLE II.—ENTRIES AND AWARDS—Continued.

Counties.	Cattle—All breeds and classes.			Sheep—All breeds and classes.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry	55	$232 50	$137 60	22	$65 00	$45 50
Pike	1	27 00	2 00	2	42 00	3 00
Portage	38	618 50	118 50	90	204 50	123 00
Preble	97	562 00	369 00	145	219 00	189 00
Putnam	62	622 00	299 00	121	390 00	265 00
Richland	83	335 00	276 20	49	148 00	50 80
Sandusky	88	791 00	382 00	63	157 00	136 00
Scioto	26	981 00	114 25	22	555 00	62 00
Seneca	35	528 00	155 00	81	201 00	151 00
Shelby	18	610 00	47 00	27	100 00	32 00
Stark	72	540 00	323 00	178	343 00	313 00
Summit	91	474 00	367 00	104	298 50	243 00
Trumbull	42	174 00	125 00	38	84 00	79 00
Tuscarawas	22	113 00	74 00	28	75 00	75 00
Union	66	238 00	170 00	108	182 00	130 00
Van Wert	75	1,127 00	348 00	171	664 00	520 00
Warren	41	273 00	162 00	44	110 00	54 00
Washington	45	501 50	157 75	33	111 50	68 25
Wayne	21	254 00	57 50	50	120 50	72 50
Williams	67	212 00	126 00	122	135 00	127 50
Wood	180	763 00	397 00	61	182 00	130 00
Wyandot	33	216 00	76 00	10	46 00	....
Total	4,983	$31,117 50	$16,430 90	5,625	$15,306 00	$11,192 90

TABLE II.—ENTRIES AND AWARDS—Continued.

Counties.	Swine—All breeds and classes.			Poultry.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	30	$90 00	$82 00	96	$121 50	$68 00
Allen	91	300 00	110 00	398	105 00	103 00
Ashtabula	58	210 00	171 00	121	106 50	63 00
Athens	4	80 00	9 00	26	30 00	10 00
Auglaize	84	280 00	163 00	210	110 00	98 48
Belmont	16	50 00	18 00	79	145 00	14 10
Brown	95	186 00	180 00	300	100 00	80 00
Butler	123	340 00	286 20	620	272 00	223 70
Carroll	68	200 00	164 00	72	80 00	32 00
Champaign	87	260 00	133 00	487	222 00	183 50
Clark	132	300 00	256 00	515	100 00	85 00
Clermont	88	170 00	136 00	164	76 00	71 00
Columbiana	31	120 00	86 00	54	60 00	22 75
Coshocton	85	295 00	171 00	623	316 80	199 90
Crawford	64	258 00	124 00	130	114 00	50 50
East Cuyahoga ...	38	205 00	81 50	108	219 90	73 65
West Cuyahoga ...	64	240 00	186 00	274	12 50	98 05
Darke	167	440 00	385 20	1,105	291 50	234 90
Erie	14	135 00	52 00	88	68 00	33 25
Fairfield	106	396 00	364 00	246	166 50	166 50
Fulton	67	232 50	142 50	231	167 85	123 15
Geauga	91	196 00	182 00	516	561 00	158 00
Greene	136	212 00	204 00	165	165 00	132 50
Guernsey	15	56 00	34 00	20	54 00	8 25
Hamilton	140	368 00	331 00	352	378 25	276 00
Hancock	58	212 00	120 00	322	210 00	136 75
Hardin	67	190 00	105 00	253	152 50	140 00
Harrison	27	81 00	36 00	14	33 00	6 00
Holmes	28	105 00	45 50	3	10 50	75
Jefferson	49	95 00	95 00	40	65 00	18 00
Knox	30	125 00	26 00	....	19 75	2 00
Lawrence	13	33 00	26 14	6	32 00	6 00
Licking	142	380 00	346 00	427	180 00	93 00
Logan	79	160 00	159 00	500	130 00	130 00
Lorain	....	300 00	162 50	....	400 00	219 40
Madison	168	383 00	376 10	149	151 50	108 00
Mahoning	89	159 00	149 50	510	202 50	132 00
Marion	113	234 00	141 00	20	150 00	25 00
Medina	64	152 00	123 00	162	....	54 40
Meigs	25	60 00	47 00	48	104 00	31 50
Mercer	246	700 00	364 00	331	175 80	154 00
Miami	104	335 00	262 00	216	190 00	125 00
Monroe	11	111 00	39 00	50	75 00	39 00
Montgomery	235	818 00	684 00	835	267 50	218 25
Morgan	....	46 00	19 00	....	172 25	41 45
Morrow	90	220 00	145 00	79	191 25	43 75
Muskingum	69	240 00	132 00	359	199 70	155 88
Noble	....	....	....	....	....	....
Paulding	95	216 00	180 00	40	112 00	22 00

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Swine—All breeds and classes.			Poultry.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry	29	$124 75	$77 00	100	$84 00	$76 00
Pike	2	59 00	6 50	4	100 00	1 00
Portage	41	135 00	62 00	224	298 00	102 00
Preble	162	288 00	230 80	291	164 00	127 65
Putnam	107	452 00	240 50	281	273 00	63 50
Richland	38	229 00	10 40	174	192 20	29 35
Sandusky	84	300 00	219 00	679	655 00	404 00
Scioto	44	332 50	98 25	546	247 00	186 50
Seneca	41	213 00	81 00	79	194 00	28 00
Shelby	51	204 00	132 00	260	139 50	95 85
Stark	121	288 00	264 00	432	247 75	191 20
Summit	123	360 00	322 00	969	663 75	380 00
Trumbull	63	108 00	95 00	42	30 00	15 75
Tuscarawas	16	75 00	46 00	278	112 00	93 00
Union	95	148 00	96 00	522	150 00	120 95
Van Wert	146	407 00	388 00	598	447 00	371 00
Warren	21	213 00	98 00	188	190 25	122 75
Washington	35	151 25	111 50	32	115 25	20 25
Wayne	68	130 00	67 50	317	154 60	80 55
Williams	51	258 00	107 50	205	125 15	48 45
Wood	112	309 00	232 00	257	201 00	117 50
Wyandot	27	95 00	49 00	174	127 50	93 30
Total	5,173	$15,854 00	$10,868 09	18,016	$12,178 50	$7,279 86

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Machinery and Agricultural Implements.			Manufactures.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	12	$16 00	$10 00	11	$16 00	$7 00
Allen	8	13 00	8 00	16	8 00	8 00
Ashtabula	4	28 25	3 75			
Athens				40	25 00	10 50
Auglaize	76			142		
Belmont		24 00	6 00		21 00	6 00
Brown	25	27 00	14 00	5	15 00	11 00
Butler						
Carroll	4			19	24 50	20 00
Champaign	2	15 00	10 00	7	18 00	15 00
Clark						
Clermont				2	6 00	
Columbiana	17	33 00	33 00			
Coshocton	38	117 75	81 25			
Crawford	4	29 00	29 00	4	27 00	27 00
East Cuyahoga	64	81 50	32 50	77	68 75	53 75
West Cuyahoga	56	65 50	30 00	17		
Darke						
Erie	61	113 00	63 25			
Fairfield						
Fulton	7					
Geauga	4	15 50	5 00			
Greene						
Guernsey	10	*244 00	*341 25	15	See Mach. & Ag. Imp.	
Hamilton	4	127 00	108 00	2	25 00	25 00
Hancock	3	30 00	15 00			
Hardin						
Harrison	7	43 50	6 00			
Holmes				19	10 00	10 00
Jefferson	20	100 00	40 00	40	100 00	100 00
Knox		23 00	7 50	35		11 00
Lawrence						
Licking						
Logan	10	30 00	30 00		22 00	61 00
Lorain						
Madison						
Mahoning	14	43 50	32 00	40	41 50	35 50
Marion	13	90 00	80 00	15	50 00	45 00
Medina	†17	59 00	47 00	See Machinery & Agri. Impl.		
Meigs						
Mercer						
Miami	62	50 00	50 00	104		
Monroe				180	85 00	30 00
Montgomery				14	110 00	105 00
Morgan					31 25	
Morrow						
Muskingum	15	126 00	26 00			
Noble	27	118 00	39 50			
Paulding						

*Includes all the following classes.
†Includes Manufactures.

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Machinery and Agricultural Implements.			Manufactures.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry	......	$20 00	....	......	....	....
Pike	......	10 50	....	......	$4 50	....
Portage	......	....	....	27	75 25	$34 50
Preble	2	40 00	$36 00	......	....	....
Putnam	......	....	....	50	160 00	99 00
Richland	6	10 00	8 00	......	....	....
Sandusky	25	44 75	25 25	68	195 50	109 75
Scioto	14	41 50	17 25	......	....	....
Seneca	......	....	....	......	....	....
Shelby	......	....	....	......	....	....
Stark	......	....	....	......	....	....
Summit	......	....	....	22	127 50	35 50
Trumbull	......	....	....	......	....	....
Tuscarawas	6	40 50	14 00	......	....	....
Union	......	....	....	......	....	....
Van Wert	32	73 50	69 50	18	93 00	52 00
Warren	40	....	....	46	62 50	25 50
Washington	1	36 00	6 00	2	95 50	8 00
Wayne	......	....	....	......	....	....
Williams	......	....	....	9	20 00	14 00
Wood	43	....	....	62	....	....
Wyandot	3	10 00	10 00	......	....	....
Total	756	$1,989 25	$1,334 00	1,108	$1,537 75	$959 00

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Farm Products.			Fruits and Flowers.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	190	$105 00	$60 25	103	$47 00	$43 25
Allen	172	100 00	60 25	33	48 00	29 00
Ashtabula	204	100 25	66 50	357	146 95	105 10
Athens	......	......	......	339	150 00	103 00
Auglaize	871	310 00	157 50	160	81 00	78 00
Belmont	......	188 00	2 00	......	41 00	30 25
Brown	380	90 00	65 00	340	105 00	85 00
Butler	149	118 50	55 80	201	98 00	86 85
Carroll	123	39 75	33 25	356	72 25	66 50
Champaign	339	132 00	117 25	534	162 25	122 00
Clark	209	100 00	84 50	398	431 55	360 05
Clermont	244	75 65	51 00	931	206 30	178 90
Columbiana	256	102 00	101 50	365	149 00	143 50
Coshocton	448	194 00	168 00	406	122 25	63 25
Crawford	237	106 00	100 00	178	93 00	64 50
East Cuyahoga	181	118 35	61 90	422	81 85	102 60
West Cuyahoga	211	88 40	56 00	276	82 60	40 40
Darke	565	271 50	183 88	883	160 50	136 80
Erie	264	104 00	89 20	280	130 00	121 00
Fairfield	260	299 00	278 00	327	253 75	211 75
Fulton	197	86 05	54 30	371	125 55	83 90
Geauga	219	120 75	91 50	470	120 55	77 55
Greene	402	135 00	115 00	160	95 00	75 00
Guernsey	1,168	See Mach.	& Ag. Imp.	615	See Mach.	& Ag. Imp.
Hamilton	87	98 00	75 00	151	254 75	250 50
Hancock	170	245 00	69 75	40	200 00	24 75
Hardin	35	60 00	25 00	44	65 00	35 75
Harrison	27	25 60	11 40	216	41 25	26 50
Holmes	......	......	......	60	35 00	10 50
Jefferson	120	110 00	100 00	150	80 00	80 00
Knox	22	99 20	......	23	24 50	......
Lawrence	63	42 00	17 90	62	60 60	25 60
Licking	125	140 50	132 75	184	235 00	170 25
Logan	270	110 00	110 00	170	137 00	137 00
Lorain	......	......	78 60	......	......	87 30
Madison	124	211 25	144 25	256	102 00	84 00
Mahoning	283	157 65	92 50	402	160 65	155 20
Marion	566	241 00	200 10	479	330 00	158 00
Medina	364	48 80	56 95	134	160 00	54 45
Meigs	77	45 50	35 50	40	39 00	20 50
Mercer	631	180 00	133 25	85	67 25	41 10
Miami	208	150 00	133 00	501	218 00	184 00
Monroe	208	105 00	40 00	170	80 00	40 00
Montgomery	280	711 00	363 75	352	400 35	276 00
Morgan	......	43 25	19 50	......	60 50	17 50
Morrow	272	86 50	75 00	92	45 50	39 00
Muskingum	222	135 90	123 86	183	305 90	101 36
Noble	15	22 00	8 50	......	......	......
Paulding	119	73 00	26 00	159	91 00	42 00

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Farm Products.			Fruits and Flowers.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry	112	$90 00	$80 25	25	$40 00	$28 50
Pike	28	12 70	22 00	7	7 75	11 35
Portage	137	100 35	36 80	347	167 00	92 00
Preble	187	149 00	124 20	287	124 00	77 00
Putnam	453	170 00	110 25	242	60 00	22 10
Richland	581	350 50	211 40	1	5 00	5 00
Sandusky	346	95 75	74 00	213	116 50	105 50
Scioto	221	76 70	48 60	284	97 15	59 40
Seneca	174	67 00	41 00	153	144 00	69 00
Shelby	104	40 00	23 50	69	64 50	51 50
Stark	357	159 75	113 05	531	360 00	284 20
Summit	414	244 50	196 30	678	350 10	282 80
Trumbull	503	199 00	91 75	312	108 50	75 75
Tuscarawas	107	270 00	170 50	168	82 00	82 00
Union	273	166 15	110 80	*501	105 00	90 95
Van Wert	346	123 50	125 75	431	125 75	126 80
Warren	223	89 00	70 00	300	110 00	84 75
Washington	25	79 45	23 10	53	56 15	18 70
Wayne	53	123 65	45 75	42	63 65	20 15
Williams	172	49 85	24 80	384	116 05	67 50
Wood	714	358 50	322 50	606	145 75	115 25
Wyandot	142	70 75	56 60	158	64 00	37 25
Total	17,249	$9,211 45	$6,248 04	18,250	$8,709 45	$6,276 86

*Includes Household Productions.

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Household Productions.			Fine Arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Adams	966	$225 00	$223 00	110	$94 00	$74 75
Allen	712	271 95	179 20	1,125	282 50	169 57
Ashtabula	922	231 80	203 60	163	141 75	116 75
Athens	59	75 00	31 25	9	25 00	10 00
Auglaize	1,640	611 00	383 40	742	180 00	142 00
Belmont	385	47 25	39 75	52	9 50	8 00
Brown	570	120 00	120 00	40	12 00	12 00
Butler	1,350	300 00	264 20	320	155 00	138 60
Carroll	464	141 00	124 50	12	17 00	12 00
Champaign	598	272 00	222 50	341	240 50	156 75
Clark	794	306 05	235 75	262	309 50	298 50
Clermont	893	238 00	200 50	126	71 00	65 00
Columbiana	435	125 00	74 75	35	23 00	21 00
Coshocton	294	219 00	185 50	183	139 00	129 00
Crawford	640	268 00	195 40	1,328	412 00	290 00
East Cuyahoga	780	131 35	113 10	247	86 75	75 00
West Cuyahoga	487	113 40	90 90	19	20 35	8 50
Darke	547	193 00	154 35	833	422 50	276 25
Erie	‡672	482 00	314 95	See Household Productions.		
Fairfield	108	262 00	241 50	265	201 00	184 50
Fulton	861	269 50	180 70	146	196 25	99 00
Geauga	897	219 00	174 75	73	105 50	59 75
Greene	189	290 00	215 00	167	175 00	140 00
Guernsey	832	See Mach. & Ag. Imp.		35	See Mach. & Ag. Imp.	
Hamilton	......	284 25	277 25	......	168 00	168 00
Hancock	......	....	....	179	465 00	176 00
Hardin	120	230 00	104 00	5	20 00	2 25
Harrison	287	127 95	62 15	18	32 25	8 50
Holmes	140	50 00	18 00	9	20 00	6 00
Jefferson	601	200 00	200 00	65	80 00	75 00
Knox	12	97 95	....	......	23 00	....
Lawrence	......	....	....	156	70 00	43 00
Licking	493	415 50	364 00	156	256 50	206 50
Logan	1,100	800 00	477 90	300	140 00	150 00
Lorain	......	....	....	......	....	176 00
Madison	511	267 00	185 00	21	52 00	22 50
Mahoning	442	154 15	119 60	139	117 00	114 00
Marion	983	277 00	148 40	117	125 00	63 75
Medina	406	....	136 85	51	80 10	37 40
Meigs	314	123 00	91 00	......	11 00	....
Mercer	511	318 00	197 85	736	707 00	330 15
Miami	1,243	514 00	441 00	515	198 00	193 00
Monroe	150	60 00	25 00	97	70 00	22 50
Montgomery	1,470	460 25	399 25	409	205 50	191 00
Morgan	......	66 25	4 00	......	38 75	5 25
Morrow	750	103 25	90 25	840	395 75	339 75
Muskingum	181	68 00	47 00	336	432 50	333 00
Noble	46	46 00	25 00	......	....	....
Paulding	500	193 00	95 00	329	263 00	102 00

‡Includes Fine Arts and Merchandise.

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Household Productions.			Fine Arts.		
	Number of entries.	Amount offered.	Amount awarded.	Number of entries.	Amount offered.	Amount awarded.
Perry	175	$117 58	$98 97	80	$30 00	$22 00
Pike	31	52 50	13 70	......	....	....
Portage	340	186 50	82 70	44	45 00	31 00
Preble	1,260	272 50	190 25	555	236 00	203 90
Putnam	1,801	360 00	307 05	2,586	733 00	522 02
Richland	......	....	....	443	374 00	166 10
Sandusky	582	218 30	162 80	149	101 25	71 50
Scioto	317	108 00	61 00	15	28 50	7 25
Seneca	538	184 00	114 00	238	180 00	129 00
Shelby	263	89 50	74 50	771	852 00	332 25
Stark	727	254 25	247 20	167	292 00	258 70
Summit	1,017	149 85	210 00	352	162 55	147 75
Trumbull	265	96 75	60 25	197	57 75	48 75
Tuscarawas	137	183 50	83 50	62	55 00	55 00
Union	See	Fruits and	Flowers	295	115 50	105 00
Van Wert	1,675	269 00	481 35	429	266 50	381 50
Warren	629	203 25	151 75	249	87 25	72 00
Washington	92	251 85	53 55	90	212 45	77 35
Wayne	447	235 10	168 55	88	88 00	64 75
Williams	1,162	233 80	153 95	634	396 50	280 47
Wood	1,403	349 50	331 50	294	176 25	151 25
Wyandot	874	159 70	123 45	47	123 20	74 77
Total	40,090	$14,242 28	$10,847 07	18,846	$11,902 15	$8,454 78

TABLE II—ENTRIES AND AWARDS—Continued.

Counties.	Merchandise.		
	Number of entries.	Amount offered.	Amount awarded.
Adams	13	$16 00	$10 00
Allen	20	145 00	91 00
Ashtabula	......	....	....
Athens	25	....	5 00
Auglaize	......	....	309 00
Belmont	......	30 50	11 50
Brown	......	....	....
Butler	......	....	....
Carroll	143	38 00	43 20
Champaign	12	42 00	21 00
Clark	......	....	....
Clermont	......	....	....
Columbiana	......	....	....
Coshocton	9	165 00	85 00
Crawford	14	76 00	35 00
East Cuyahoga	49	55 25	33 50
West Cuyahoga	36	67 50	42 50
Darke	73	884 50	679 95
Erie	See Household Production.		
Fairfield	......	....	....
Fulton	79	245 00	130 00
Geauga	2	6 00	3 00
Greene	......	....	....
Guernsey	843	See Mach. & Ag. Imp.	
Hamilton	......	....	....
Hancock	5	192 00	422 89
Hardin	50	15 00	10 00
Harrison	118	59 00	18 00
Holmes	2	15 00	2 00
Jefferson	55	70 00	70 00
Knox	......	....	....
Lawrence	......	....	....
Licking	1	25 00	25 00
Logan	105	175 00	107 40
Lorain	......	....	....
Madison	......	....	....
Mahoning	10	27 50	26 50
Marion	76	50 00	40 50
Medina	......	32 40	....
Meigs	5	....	....
Mercer	23	79 00	20 50
Miami	20	....	....
Monroe	230	50 00	20 20
Montgomery	......	....	....
Morgan	......	16 00	5 00
Morrow	......	....	....
Muskingum	2	39 00	7 10
Noble	35	50 00	40 50
Paulding	13	78 00	45 00

TABLE II.—ENTRIES AND AWARDS—Concluded.

Counties.	Merchandise.		
	Number of entries.	Amount offered.	Amount awarded.
Perry	......	....	....
Pickaway	......	....	....
Pike	......	....	....
Portage	3	$10 00	$8 00
Preble	17	78 00	40 50
Putnam	180	482 00	316 90
Richland	12	126 30	145 75
Sandusky	40	35 25	12 00
Scioto	......	....	....
Seneca	10	129 00	50 00
Shelby	......	....	....
Stark	3	86 00	9 00
Summit	......	....	16 05
Trumbull	......	....	....
Tuscarawas	12	....	15 00
Union	280	170 00	110 00
Van Wert	......	....	280 87
Warren	18	20 75	7 50
Washington	21	119 60	54 50
Wayne	7	36 00	14 50
Williams	32	75 25	41 40
Wood	159	33 00	26 00
Wyandot	18	106 00	34 00
Total	2,880	$4,250 80	$3,542 21

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1902.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness, if any, on all accounts.	Number of members.	Time of annual election.
Adams	16½	Owned	$7,500 00	$1,750 00	163	January 31.
Allen	30	Leased		291 28	815	September 18.
Ashtabula	14	Owned	8,000 00		190	January 9.
Athens	27	Owned	15,000 00	6,450 00	84	December 26.
Auglaize	40	Owned	10,000 00		14	October 3.
Belmont	17	Owned		400 00	213	August 27.
Brown	20	Owned	10,000 00		595	January 26.
Butler	53	Owned	53,000 00	18,000 00	10	October 8.
Carroll	28	Owned	7,000 00	1,600 00	14	January 8.
Champaign	50	Owned	15,000 00		81	January 17.
Clark	46	*Owned	75,000 00	1,000 00	731	December 10.
Clermont	24	Owned	10,000 00	650 00	822	August 29.
Columbiana	26	Owned	10,000 00	3,000 00		November 7.
Coshocton	38	Owned	35,000 00	3,650 00	16	January.
Crawford	30	*Owned	5,600 00		219	October 8.
East Cuyahoga	61¾	*Owned			22	January 24.
West Cuyahoga	20	Owned	15,000 00	250 00	173	January 23.
Darke	45	Owned	30,000 00			August 28.
Erie	45	Leased			413	November 11.
Fairfield	76	Owned	75,000 00	20,000 00	371	January 30.
Fulton	40	Owned	7,700 00	52 11	199	January 5.
Geauga	22	Owned		1,400 00	450	January 12.
Greene	39	Leased			483	August 6.
Guernsey	30	Owned	4,000 00		21	January 10.
Hamilton	57	*Owned	50,000 00		407	August 20.
Hancock	70	Owned	23,000 00	1,650 00	322	January 31.

*Owned by County.

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1902—Continued.

Counties.	Number of acres in Fair Grounds.	Grounds owned by the society or leased.	If owned, cash value of real estate and improvements thereon.	Amount of indebtedness, if any, on all accounts.	Number of members.	Time of annual election.
Hardin	45½	Owned	$6,000 00	$2,200 00	30	January 31.
Harrison	30	Leased			45	January 24.
Holmes	20	Leased		217 40	37	
Jefferson	12¾	Leased			440	November 7.
Knox	47	Leased			32	January 31.
Lawrence	12	Leased			87	February 14.
Licking	80	Owned	75,000 00	6,810 00	12	October 31.
Logan	37	Owned	12,000 00	2,000 00	2,500	January 31.
Lorain	31	Owned	60,000 00	7,500 00	267	January 31.
Madison	46	Owned	18,000 00	1,800 00	1,225	January 6.
Mahoning	40	Owned	5,000 00		144	November 4.
Marion	47	†	7,000 00		156	January 10.
Medina	27¾	Owned	8,000 00			January 31.
Meigs	76	Owned	15,000 00	13,244 85	70	October 10.
Mercer	45	*Owned	25,000 00	2,400 00	15	September 26.
Miami	51	Owned	30,000 00		24	November 3.
Monroe	16	Owned	7,000 00	900 00	153	January 31.
Montgomery	42	*Owned	110,000 00		22	May 2.
Morgan	27	Owned	3,800 00	3,500 00	90	
Morrow	35	Owned	8,000 00		275	October 2.
Muskingum	44	Owned	50,000 00	12,791 60	589	January 31.
Noble	10	Owned	4,000 00		40	January 30.
Paulding	33	Owned	3,800 00	1,715 28	500	September 4.
Perry	20	Leased			51	January 31.
Pike	20	Leased			32	January 31.
Portage	22¾	Owned	10,000 00	6,000 00	240	January 10.

Preble	39½	Owned	16,000 00	......	13	September 18.
Putnam	40	Owned	2,500 00	786 86	180	January 31.
Richland	30	*Owned	25,000 00	150 00	500	September 19.
Sandusky	35	Owned	10,000 00	2,500 00	1,500	February 7.
Scioto	20	Leased	......	350 00	54	January 31.
Seneca	88	Leased	......	......	300	February 7.
Shelby	43	*Owned	20,000 00	......	......	......
Stark	53	*Owned	45,000 00	14,900 00	287	January 3.
Summit	47	Owned	50,000 00	15,000 00	80	January 17.
Trumbull	36¼	Owned	10,000 00	......	......	......
Tuscarawas	25	Owned	25,000 00	9,320 00	168	January 10.
Union	49¼	Owned	10,000 00	1,500 00	2,000	January 31.
Van Wert	37½	Owned	16,000 00	2,321 28	2,859	September 10.
Warren	33	Leased	......	353 81	1,800	September 25.
Washington	33	Owned	12,000 00	9,000 00	385	December 17.
Wayne	40	*Owned	8,000 00	2,600 00	140	January 3.
Williams	39¼	Owned	8,000 00	4,500 00	519	September 11.
Wood	57	Leased	......	......	194	January 5.
Wyandot	42	Leased	......	......	19	January 31.
Total	2,665¾		$1,185,900 00	$184,504 47	24,902	

* Owned by county.
† 25 Leased, 22 Owned.
Where less than twenty-five members are indicated, the number undoubtedly refers to members of the Board of Directors.

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1902—Continued.

Counties.	Cash in treasury at beginning of fiscal year.	Amount received from gate admissions.	Amount received from entry fees.
Adams		$1,432 40	$87 35
Allen		2,843 50	565 85
Ashtabula		2,602 39	690 00
Athens		2,069 90	311 00
Auglaize		4,134 60	652 20
Belmont	$211 07	818 05	206 33
Brown	38 33	2,771 20	13 00
Butler	4,790 84	7,129 75	975 00
Carroll	488 00	2,436 00	516 00
Champaign	2,752 61	3,564 83	1,433 50
Clark	68 45	5,670 57	1,928 70
Clermont	283 15	2,103 75	139 70
Columbiana	868 39	2,581 45	390 00
Coshocton		6,156 42	1,223 87
Crawford	17 91	2,904 50	338 20
East Cuyahoga	408 11	1,951 65	265 80
West Cuyahoga	271 25	1,218 45	466 10
Darke	385 90	9,070 09	1,026 40
Erie	11 50	1,792 30	932 80
Fairfield	4,680 23	8,826 25	1,555 75
Fulton		2,493 20	310 45
Geauga	199 00	860 00	
Greene	150 00	2,989 15	931 75
Guernsey	13 95	2,242 35	283 70
Hamilton	433 88	6,837 13	1,786 50

Hancock	9 77	3,925 85	867 45
Hardin	140 00	2,160 85	804 00
Harrison		1,760 00	200 00
Holmes		931 37	37 20
Jefferson	425 10	1,392 25	394 00
Knox		938 07	31 00
Lawrence	195 49	571 10	84 25
Licking		4,006 65	1,273 00
Logan		4,146 05	1,432 15
Lorain		3,529 35	247 20
Madison	37 66	4,344 72	1,579 43
Mahoning	83 00	4,445 15	635 45
Marion	1,469 00	3,244 75	147 10
Medina	293 98	3,102 73	350 00
Meigs		2,218 75	152 00
Mercer	1,924 40	5,748 90	272 40
Miami	2,391 97	5,588 90	1,777 00
Monroe	625 66	2,305 64	288 95
Montgomery	5,251 79	7,436 10	3,069 50
Morgan	282 43	982 75	254 50
Morrow		2,611 00	768 20
Muskingum	282 55	4,601 75	671 56
Noble	394 16	525 05	310 26
Paulding	24 32	2,269 00	706 35
Perry	297 69	1,432 50	357 18
Pike	60 16	1,029 90	352 05
Portage	73 48	382 00	103 10
Preble		5,455 80	1,019 50
Putnam		5,059 50	1,134 70
Richland	719 30	2,134 90	391 05
Sandusky	159 07	3,861 33	504 90
Scioto	131 26	1,095 24	165 25
Seneca	556 00	2,566 40	356 00
Shelby		3,555 60	1,494 75
Stark	752 17	3,048 10	928 85
Summit	720 89	7,682 67	1,810 85
Trumbull		3,173 35	1,077 00
Tuscarawas	1,560 44	2,391 90	559 15
Union		2,834 05	220 80

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1902—Continued.

Counties.	Cash in treasury at beginning of fiscal year.	Amount received from gate admissions.	Amount received from entry fees.
Van Wert	$906 74	$5,938 15	$554 20
Warren	....	2,833 85	818 55
Washington	26 88	4,183 85	630 00
Wayne	....	1,618 00	830 05
Williams	542 80	4,348 65	296 50
Wood	....	....	....
Wyandot	46 00	867 20	399 36
Total	$36,456 73	$225,779 55	$47,386 69

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1902—Continued.

Counties.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings and permanent improvements.	Amount paid for current expenses other than premiums.	Amount paid on old indebtness.	Balance cash in treasury.	Amount of unpaid bills and accounts, if any, for current year.
Adams	$267 75	$343 50	$1,390 25	$239 84	$1,009 67			$508 76
Allen	719 25	3,324 70	2,698 02		2,911 02	$1,844 26		291 28
Ashtabula	682 30	1,289 40	2,822 70		2,232 37		$209 02	
Athens	301 50	916 87	1,476 75		1,266 76	800 00	55 76	50 00
Auglaize	2,223 00	315 58	3,971 98	664 40	2,583 65	770 63	105 35	
Belmont	97 50	1,231 45	843 67	1,126 62	584 74		9 37	
Brown	518 40	565 24	1,489 60	685 24	1,124 78		609 05	2 50
Butler	1,957 60	3,500 56	5,529 65		5,612 19	1,000 00	6,211 91	
Carroll	496 00	564 87	2,105 45	300 00	1,783 06		312 36	
Champaign	1,103 50	654 42	4,464 48	794 77	1,780 29		2,469 32	
Clark	1,815 20	4,967 95	5,881 80	4,552 95	3,725 36		290 76	
Clermont	413 00	746 00	2,099 40	453 80	940 27		192 13	
Columbiana	439 00	1,092 50	1,772 50		2,386 76		1,212 08	
Coshocton	1,345 00	492 04	4,521 40	3,706 62	3,659 02			2,669 71
Crawford	787 00	821 23	2,515 40	806 87	1,356 14		190 43	
East Cuyahoga	365 50	422 15	2,051 65	100 34	1,136 55		124 57	
West Cuyahoga	489 00	1,113 55	1,693 35		1,690 67		174 33	
Darke	2,332 75	231 70	6,376 23	1,248 90	4,989 33		432 38	
Erie	1,314 00	1,552 49	1,879 80	462 54	3,157 26		103 49	
Fairfield	1,700 00	1,235 00	4,939 25	2,100 00	1,000 00		9,958 00	
Fulton	574 71	764 81	2,216 90		1,978 38			52 11
Geauga	228 00	2,445 00	1,431 00	353 00	1,414 00	494 00	40 00	1,400 00
Greene	694 65	1,000 00	3,864 50	1,181 73	1,108 20		681 11	
Guernsey	288 55	736 01	1,914 61	550 00	1,005 54		66 51	
Hamilton	2,116 69	1,625 00	6,448 25	253 73	6,010 50		86 72	250 00
Hancock	828 00	263 17	4,101 89	313 72	1,218 39		260 24	

TABLE III—PROPERTY, RECEIPTS, DISBURSEMENTS, ETC., OF COUNTY AGRICULTURAL SOCIETIES IN 1902—Concluded.

Counties.	Amount received from booth rents and privilege permits.	Amount received from other sources.	Amount paid in premiums.	Amount paid for real estate, buildings & permanent improvements.	Amount paid for current expenses other than premiums.	Amount paid on old indebtness.	Balance cash in treasury.	Amount of unpaid bills and accounts, if any, for current year.
Hardin	$738 50	$90 30	$2,611 00	$500 00	$743 00	....	$78 65	....
Harrison	150 00	266 03	1,219 55	....	701 96	16 80	437 72	606 00
Holmes	162 00	....	948 22	....	428 11	....	....	217 40
Jefferson	344 75	1,791 68	2,693 00	1,018 16	600 75	....	35 87	....
Knox	....	....	1,195 00	....	19 00	....	....	245 80
Lawrence	113 22	51 75	465 14	76 00	327 34	....	147 33	....
Licking	576 00	1,515 00	4,433 20	1,484 56	2,262 89	....	....	810 00
Logan	1,178 15	2,415 58	4,520 00	2,479 85	2,524 92	....	....	2,352 89
Lorain	633 00	3,664 95	2,358 50	996 91	4,618 09	....	....	....
Madison	822 00	1,588 49	4,485 85	717 69	1,420 82	1,170 00	577 94	120 00
Mahoning	790 00	815 70	3,067 45	200 00	3,324 10	....	177 75	33 95
Marion	759 25	188 00	3,144 75	517 65	1,436 10	....	1,709 60	125 00
Medina	629 30	50 40	2,136 30	84 97	1,803 57	....	401 57	....
Meigs	296 75	100 00	1,603 50	129 37	987 00	....	6 40	....
Mercer	1,492 00	1,083 37	4,874 85	350 00	2,354 23	1,737 52	1,209 47	....
Miami	1,747 25	2,000 63	5,849 00	649 68	3,072 26	....	3,934 81	....
Monroe	494 50	540 62	1,566 70	....	1,025 27	....	1,663 40	....
Montgomery	2,320 60	2,898 90	8,538 75	3,247 85	6,704 39	....	2,485 90	....
Morgan	....	25 00	712 00	....	847 95	....	....	....
Morrow	724 60	867 18	2,614 75	250 34	2,067 05	....	38 84	....
Muskingum	453 15	13,168 70	3,371 19	8,831 47	6,928 53	....	46 52	291 60
Noble	65 00	252 67	646 75	500 00	398 93	....	1 46	....
Paulding	644 09	973 48	2,376 00	701 21	1,540 03	....	....	415 28
Perry	297 50	888 43	1,462 82	857 80	939 96	....	12 72	....
Pike	154 40	53 90	886 05	196 91	265 05	159 00	143 40	....

Portage	166 50	893 56	85 00	100 00	1,416 49	....	16 15	150 00
Preble	1,357 34	869 66	3,113 20	2,529 06	3,954 91	....	....	....
Putnam	1,623 55	1,133 53	5,308 82	424 71	3,217 75	....	....	....
Richland	260 00	726 50	2,169 20	381 85	1,637 88	....	42 82	....
Sandusky	613 50	44 00	3,754 05	209 26	1,341 21	....	....	13 00
Scioto	225 45	42 78	1,238 00	126 50	48 70	....	246 78	....
Seneca	672 50	1,241 50	1,895 00	....	2,147 40	....	1,350 00	118 00
Shelby	708 70	1,117 08	3,920 45	1,162 66	1,670 11	....	122 91	249 75
Stark	1,070 00	1,970 65	4,039 15	494 37	4,487 22	....	....	180 00
Summit	1,489 90	3,047 25	2,706 90	1,586 29	9,167 36	1,291 01	....	....
Trumbull	899 90	952 50	2,452 25	244 19	2,006 79	500 00	416 83	....
Tuscarawas	517 50	2,752 32	1,972 50	1,229 15	2,924 01	....	1,655 65	....
Union	563 00	1,444 76	3,138 27	1,191 81	1,334 60	....	....	602 07
Van Wert	1,323 25	2,104 02	5,731 27	2,018 79	3,897 58	....	....	....
Warren	796 44	511 68	2,723 25	....	1,647 52	353 81	235 94	30 00
Washington	540 00	1,025 00	2,167 45	450 00	3,767 24	....	21 04	125 00
Wayne	188 20	1,162 26	2,276 25	93 46	1,028 80	400 00	....	....
Williams	1,020 10	....	2,506 76	957 19	2,261 26	....	482 84	....
Wood	....	....	1,667 47	....	634 78	....	....	626 19
Wyandot	100 00	355 50						
Total	$53,819 69	$88,874 45	$201,146 14	$56,884 78	$153,597 81	$10,537 03	$41,495 20	$12,536 29

OHIO STATE FAIR

AND

INDUSTRIAL EXPOSITION

COLUMBUS, August 31, September 1, 2, 3 and 4,

1903.

The Ohio State Fair and Industrial Exposition of 1903 reached the highest mark of success in Ohio fair history. It was made an occasion to celebrate the one-hundredth anniversary of the birth of the state. Appropriate exercises, consisting of speeches by men of national renown, and patriotic music by famous bands and musical organizations, were held on the special days assigned, which, with the illustrations of progress as presented in the grand and varied exhibits, was indeed a fitting celebration of Ohio's first century of greatness.

The one hundred and fifteen acres of park grounds, covered with numerous substantial and commodious exposition buildings, sufficient for each distinct department of the fair, are alone a monument to Ohio's hundred years of progress.

In the buildings and on the grounds the exhibits were grouped in departments and classes, each department being well filled and complete in itself. The character of the exhibits and the beauty of the display compared favorably, and, in some respects, even excelled similar displays made at some of the great National Expositions that have been held. On the whole, great credit was done to the diversified industries of Ohio and to the management of the fair.

There was not a department or class that did not merit the highest praise, and not one that did not exert an educational influence. Exhibitors seemed to vie with each other in presenting their exhibits in the most attractive form to interest and instruct the thousands of visitors who attended the fair.

The departments of agricultural and horticultural productions reflected most grandly the possibilities of Ohio's cultivated fields and gardens, and the richness of her orchards and greenhouses.

The buildings crowded with light machinery, and the acres of ground that were covered with engines, threshers, binders, stackers, grinders, crushers, saw-mills and other heavy machinery, very plainly and forcibly illustrated the inventions and improvements up-to-date, and was exceedingly interesting to progressive farmers who seek the most practical and economical means of raising, saving and storing the farm crops, and utilizing to profitable advantage all farm productions.

In the woman's and fine art departments, the magnificent displays attracted all visitors. The lessons in household art were many and valuable, and no doubt will result in additions and improvements, in the useful and ornamental, in thousands of homes throughout the state.

The exhibits in the merchant's department were interesting and beautiful. Each exhibitor presented his wares in the best possible light, and much trade was established between the merchant exhibitors at the State Fair and many visitors from all parts of the state who came to see and to learn. The opportunities of the fair are appreciated by the merchant and the manufacturer, for through it many new names are added to their order books.

Two large buildings and the center platforms of a third building were required to accommodate the great and elegant display of carriages, buggies, and other light vehicles. It can positively be said that the vehicle show has never been equaled anywhere.

Any reference to the grand live-stock buildings and the high class exhibition of horses, cattle, sheep, swine and poultry, would fall far short of presenting a correct idea of their grandeur and importance. All the recognized pure breeds were represented in each of the classes, and competition for the prizes offered was close and spirited. The best stables, herds and flocks from Ohio, and several other states, were to be seen in the choicest animals. The lessons of the several live stock departments were many and valuable and must result in greater use of all the improved breeds of our domestic animals.

The State Fair of 1903 will long be remembered for its general grand exhibits and its many special interesting features. The patronage was large from all parts of the state, and people were well pleased and well repaid for their attendance.

The State Board of Agriculture, as managers of the State Fair, labor to make the annual exhibitions educational in every respect, a benefit to the people and the industries of the state, by presenting new ideas and the latest improvements that encourage progress and add to our material welfare. How far the Board has succeeded in these laudable purposes the public is best able to judge.

This bulletin contains a list of the awards in each department of the fair, a special report upon the dairy test and a list of the exhibits in those departments where premium competition was not entered into, all of which is,

Respectfully submitted,

W. W. MILLER,
Secretary.

J. W. FLEMING,
Assistant Secretary.

LIST OF AWARDS

OHIO STATE FAIR.

1903.

FIRST DEPARTMENT—HORSES.

C. H. GANSON, Member in charge.

ROADSTERS, STANDARD BRED.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
Walls & Lehman, Columbus, O.	Bob L	First	$20 00
Belmont Farm, Xenia, O.	Xenium	Second	10 00
Stallion 3 Years Old and Under 4.			
Seymour Smith, Pataskala, O.	Sunland Clay	First	20 00
W. M. Brimbee, Cardington, O.		Second	10 00
Stallion 2 Years Old and Under 3.			
J. T. Deardoff, Lebanon, O.	William Lucas	First	15 00
Seymour Smith, Pataskala, O.	Dark Clay	Second	5 00
Stallion 1 Year Old and Under 2.			
Mat Hutchinson, Marysville, O.		First	15 00
John Caldwell, Urbana, O.		Second	5 00
Stallion Colt Under 1 Year.			
J. R. Heskett, Fulton, O.		First	10 00
E. S. McClellan, Urbana, O.		Second	5 00
Mare 4 Years Old or Over.			
Belmont Farm, Xenia, O.	Xenia Princess	First	20 00
Seymour Smith, Pataskala, O.	Fancy Clay	Second	10 00
Mare 3 Years Old and Under 4.			
James Sage, Cardington, O.		First	15 00
Seymour Smith, Pataskala, O.	Eda Clay	Second	5 00

ROADSTERS, STANDARD BRED—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Mare 2 Years Old and Under 3.			
Seymour Smith, Pataskala, O.	Dolly Clay	First	$15 00
Filly 1 Year Old and Under 2.			
John Caldwell, Urbana, O.		First	10 00
Filly Colt Under 1 Year.			
Seymour Smith, Pataskala, O.	Darkness	First	8 00
John Caldwell, Urbana, O.		Second	4 00
Four Colts the Get of One Sire.			
E. S. McClellan, Urbana, O.		First	20 00
Two Colts the Progeny of One Mare.			
Seymour Smith, Pataskala, O.	Ollie Churchill	First	15 00
John Caldwell, Urbana, O.		Second	8 00

Judge—D. L. Sampson.

ROADSTERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
J. A. Hall, Columbus, O.	Brownie Wilton	First	$20 00
McLaughlin Bros., Columbus, O.		Second	10 00
Stallion 3 Years Old and Under 4.			
J. L. Grove, Newark, O.		First	20 00
A. O. Chase, Mt. Gilead, O.		Second	10 00
Stallion 2 Years Old and Under 3.			
T. A. Denman, Leonardsburg, O.	David B	First	15 00
E. S. McCellan, Urbana, O.		Second	5 00
Stallion 1 Year Old and Under 2.			
W. W. Ferguson, Delaware, O.	Burt Oliver	First	15 00
Chas. Kunze, Delaware, O.	Billy Parks	Second	5 00
Stallion Colt Under 1 Year.			
E. S. McClellan, Urbana, O.		First	10 00
Mare 4 Years Old or Over.			
J. W. Swisher, Newark, O.		First	20 00
E. L. McCollem, Agent, Columbus, O.		Second	10 00
Mare 3 Years Old and Under 4.			
J. R. Heskett, Fulton, O.		First	15 00
Mare 2 Years Old and Under 3.			
D. M. Bell, Leonardsburg, O.		First	15 00
C. G. Runyan, Delaware, O.	Ester R	Second	5 00
Filly 1 Year Old and Under 2.			
H. C. Geyer, Camp Chase, O.	Vienna	First	10 00
W. W. Ferguson, Delaware, O.	Princess	Second	5 00

ROADSTERS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Filly Colt Under 1 Year.			
John Caldwell, Urbana, O.		First	$8 00
Wm. Fisher, Camp Chase, O.	Bess	Second	4 00
Four Colts the Get of One Sire.			
J. R. Heskett, Fulton, O.		First	20 00
E. S. McClellan, Urbana, O.		Second	10 00
Two Colts the Progeny of One Mare.			
J. R. Heskett, Fulton, O.		First	15 00
John Caldwell, Urbana, O.		Second	8 00

Judge—D. L. Sampson.

FRENCH COACH.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
McLaughlin Bros., Columbus, O.	Ventra Farne	First	$20 00
Same	Vingt Handps	Second	10 00
Stallion 3 Years Old and Under 4.			
McLaughlin Bros., Columbus, O.	Amaut	First	20 00
Same	Amen	Second	10 00
Stallion 2 Years Old and Under 3.			
McLaughlin Bros., Columbus, O.	Adjutant	First	15 00
Mare 4 Years Old and Over.			
E. L. McCollem, Agent, Columbus, O.		First	20 00
Two Colts, the Progeny of One Mare.			
McLaughlin Bros., Columbus, O.		First	15 00

Judge—Vint Weatherby.

HACKNEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
Leonard & Booco, London, O.	Gav Lad	First	$20 00
McLaughlin Bros., Columbus, O.	Virgile	Second	10 00
Mare 4 Years Old or Over.			
E. L. McCollem, Agent, Columbus, O.		First	20 00

Judge—A. H. Miller.

FRENCH DRAFT AND BELGIAN.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
McLaughlin Bros., Columbus, O.	Omer	First	$20 00
G. W. Crawford, Newark, O.	Coniolon	Second	10 00
Stallion 3 Years Old and Under 4.			
McLaughlin Bros, Columbus, O.	Umas	First	20 00
Same	Castor	Second	10 00
Stallion 2 Years Old and Under 3.			
McLaughlin Bros., Columbus, O.	Ronsin	First	15 00
Same	Pithon	Second	5 00
Mare 4 Years Old or Over.			
W. W Ferguson, Delaware, O.	Coley	First	20 00
Same	Rosa	Second	10 00
Mare 3 Years Old and Under 4.			
W. W. Ferguson, Delaware, O.	Daisy	First	15 00
Mare 2 Years Old and Under 3.			
Geo. Garlinghouse, Johnstown, O.		First	15 00
Filly 1 Year Old and Under 2.			
W. W. Ferguson, Delaware, O.	Anna	First	10 00
H. L. Domigan, Sunbury, O.	Flora	Second	5 00
Filly Colt Under 1 Year.			
W. W. Ferguson, Delaware, O.	Fancy	First	8 00
Same		Second	4 00
Four Colts the Get of One Sire.			
McLaughlin Bros., Columbus, O.	Guels	First	20 00
Same	Napoleon	Second	10 00
Two Colts the Progeny of One Mare.			
McLaughlin Bros., Columbus, O.	Coquette	First	15 00
Same	Besche	Second	8 00

Judges—Vint Weatherby, A. H. Miller and C. Bordwell.

PERCHERONS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
McLaughlin Bros., Columbus, O.	Siegbert	First	$20 00
Same	Sophach	Second	10 00
Stallion 3 Years Old and Under 4.			
Hartman Stock Farm, Columbus, O.	Major	First	20 00
McLaughlin Bros., Columbus, O.	Urville	Second	10 00
Stallion 2 Years Old and Under 3.			
McLaughlin Bros., Columbus, O.	Fronton	First	15 00
Hartman Stock Farm, Columbus, O.	Marceau	Second	5 00

PERCHERONS — Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 1 Year Old and Under 2.			
McLaughlin Bros., Columbus, O.	Bruneau	First	$15 00
Hartman Stock Farm, Columbus, O.	Bibi	Second	5 00
Stallion Colt Under 1 Year.			
Hough Bros. & Roop, Sunbury, O.		First	10 00
Mare 4 Years Old or Over.			
Hartman Stock Farm, Columbus, O.	Linda	First	20 00
Same	Eliza	Second	10 00
Mare 3 Years Old and Under 4.			
Hartman Stock Farm, Columbus, O.	Ugoline	First	15 00
Same	Lina	Second	5 00
Mare 2 Years Old and Under 3.			
Hartman Stock Farm, Columbus, O.	Christene	First	15 00
Same	Vetebre	Second	5 00
Filly 1 Year Old and Under 2.			
Chas. Kunze, Delaware, O.	Hamer Grey	First	10 00
Hartman Stock Farm, Columbus, O.	Meduline	Second	5 00
Filly Colt Under 1 Year.			
H. L. Domigan, Sunbury, O.	Gladys	First	8 00
Four Colts the Get of One Sire.			
McLaughlin Bros., Columbus, O.	Castelar	First	20 00
Hartman Stock Farm, Columbus, O.	Anida	Second	10 00
Two Colts the Progeny of One Mare.			
McLaughlin Bros., Columbus, O.	Rustique	First	15 00
Same	Lisette	Second	8 00

Judges—Vint Weatherby, A. H. Miller and C. Bordwell.

CLYDESDALES AND SHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallions 4 Years Old or Over.			
Leonard & Booco, London, O.	Lord Byron	First	$20 00
Stallion 3 Years Old and Under 4.			
Leonard & Booco, London, O.	Sampson	First	20 00
Stallion 2 Years Old and Under 3.			
Leonard & Booco, London, O.	Ohio Boy	First	15 00
Stallion 1 Year Old and Under 2.			
Leonard & Booco, London. O.	Ohio King	First	15 00
Stallion Colt Under 1 Year.			
Leonard & Booco, London. O.	Ohio Lad	First	10 00
Mare 4 Years Old or Over.			
Leonard & Booco, London, O.	Trojan Belle	First	20 00

CLYDESDALES AND SHIRES—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Mare 3 Years Old and Under 4.			
Leonard & Booco, London, O.		First	$15 00
Mare 2 Years Old and Under 3.			
Leonard & Booco, London, O.	Ohio Maid	First	15 00
Filly 1 Year Old and Under 2.			
Leonard & Booco, London, O.	Nailston Greese	First	10 00
Four Colts the Get of One Sire.			
Leonard & Booco, London, O.	Lord Byron	First	20 00
Two Colts the Progeny of One Mare.			
Leonard & Booco, London, O.	Ohio Belle	First	15 00

Judge—Vint Weatherby.

GRADE COACH.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Gelding or Mare 4 Years Old or Over.			
W. M. Brimbee, Cardington, O.		First	$10 00
Frank Sage, Cardington, O.		Second	5 00
Gelding or Mare 3 Years Old and Under 4.			
J. R. Heskett, Fulton, O.		First	10 00
James Sage, Cardington, O.		Second	5 00
Gelding or Mare 2 Years Old and Under 3.			
E. S. McClellan, Urbana, O.		First	10 00
J. R. Heskett, Fulton, O.		Second	5 00
Gelding or Mare 1 Year Old and Under 2.			
Leonard & Booco, London, O.	Nellie	First	10 00
J. R. Heskett, Fulton, O.		Second	5 00
Matched Team in Harness to Vehicle.			
Frank Sage, Cardington, O.		First	15 00

Judge—C. Bordwell.

GRADE DRAFT.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Gelding or Mare 4 Years Old or Over.			
H. L. Domigan, Sunbury, O.		First	$10 00
Thos. Johnson, Columbus, O.	Nellie	Second	5 00
Gelding or Mare 3 Years Old and Under 4.			
H. L. Domigan, Sunbury, O.		First	10 00

GRADE DRAFT—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Gelding or Mare 1 Year Old and Under 2.			
H. L. Domigan, Sunbury, O.		First	$10 00
Matched Team in Harness to Vehicle.			
W. M. Taylor, Columbus, O.		First	15 00
H. L. Domigan, Sunbury, O.		Second	8 00

Judge—C. Bordwell.

GENERAL PURPOSE.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Gelding 4 Years Old or Over.			
Vint Weatherby, West Mansfield, O.		First	$15 00
J. D. Spangler, Thornville, O.	Enoch	Second	8 00
Gelding 3 Years Old and Under 4.			
Geo. Garlinghouse, Johnstown, O.	Jack	First	15 00
Gelding 2 Years Old and Under 3.			
E. P. Rolson & Son, Delaware, O.	Toney	First	10 00
Mare 4 Years Old and Over.			
E. S. McClellan, Urbana, O.		First	15 00
John Fladt, Camp Chase, O.	Maude	Second	8 00

Judge—C. Bordwell.

SADDLE HORSES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 4 Years Old or Over.			
E. L. McCollem, Agent, Columbus, O.		First	$20 00
J. A. Wallace, Columbus, O.	Blue Jeans	Second	10 00
Mare 4 Years Old or Over.			
E. L. McCollem, Agent, Columbus, O.	May Frost	First	20 00
Miss D. G. Cherry, Newark, O.		Second	10 00
Mare Under 4 Years Old.			
J. A. Wallace, Columbus, O.	Edna	First	15 00
E. L. McCollem, Agent, Columbus, O.		Second	8 00
Gelding 4 Years Old or Over.			
E. L. McCollem, Agent, Columbus, O.	Golden Gate	First	20 00
Same.	Brady	Second	10 00
Gelding Under 4 Years.			
E. L. McCollem, Agent, Columbus, O.	Chick	First	15 00

Judges—D. L. Sampson and W. J. Hoddy.

COMBINED HARNESS AND SADDLE HORSES.

Owners's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Mare Any Age.			
E. L. McCollem, Agent, Columbus, O.	May Frost	First	$20 00
J. A. Wallace, Columbus, O.	Edna	Second	10 00
Gelding Any Age.			
E. L. McCollem, Agent, Columbus, O.		First	20 00
Same		Second	10 00

Judges—D. L. Sampson and W. J. Hoddy.

HIGH SCHOOL CLASS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Horse, Mare, or Gelding Any Age.			
E. L. McCollem, Agent, Columbus, O.	Rosie Lee	First	$25 00
J. A. Wallace, Columbus, O.	Edna	Second	15 00

Judge—B. L. Bargar.

MATCHED TEAMS AND SINGLE DRIVERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Pair of Matched Roadsters.			
E. L. McCollem, Agent, Columbus, O.		First	$20 00
Gentlemen's Fancy Driving Team.			
E. L. McCollem, Agent, Columbus, O.		First	20 00
Frank Sage, Cardington, O.		Second	10 00
Gentlemen's Fancy Single Driver.			
J. W. Swisher, Newark, O.		First	15 00
W. M. Brimbee, Cardington, O.		Second	8 00

Judge—D. L. Sampson.

SHETLAND PONIES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 3 Years Old or Over.			
Cobb Gavitt, Ashley, O.		First	$15 00
Hugh Pavey, Columbus, O.	Teddy	Second	8 00
Stallion 2 Years Old and Under 3.			
Cobb Gavitt, Ashley, O.		First	10 00
Same		Second	5 00
Stallion 1 Year Old and Under 2.			
Cobb Gavitt, Ashley, O.		First	8 00
Mare 3 Years Old or Over.			
J. D. Haynie, Columbus, O.	Dollie	First	15 00
Ila May Matticks, Columbus, O.	Nellie	Second	8 00
Mare 2 Years Old and Under 3.			
G. W. Sperry, Utica, O.		First	10 00
Cobb Gavitt, Ashley, O.		Second	5 00
Filly 1 Year Old and Under 2.			
G. W. Sperry, Utica, O.		First	8 00
Filly Colt Under 1 Year.			
G. W. Sperry, Utica, O.		First	5 00

Judge—C. Bordwell.

IN HARNESS TO VEHICLE.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Single Turnout.			
E. L. McCollem, Agent, Columbus, O.		First	$10 00
Ila May Matticks, Columbus, O.		Second	5 00
Double Team Turnout.			
Cobb Gavitt, Ashley, O.		First	15 00
G. W. Sperry, Utica, O.		Second	8 00
Four-In-Hand.			
G. W. Sperry, Utica, O.		First	15 00
Cobb Gavitt, Ashley, O.		Second	8 00
Pony Under Saddle.			
E. L. McCollem, Agent, Columbus, O.		First	8 00
Cobb Gavitt, Ashley, O.		Second	4 00

Judge—A. H. Miller.

PONIES OTHER THAN SHETLAND.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Stallion 3 Years Old or Over.			
Cobb Gavitt, Ashley, O.		First	$15 00
Same		Second	8 00
Stallion 2 Years Old and Under 3.			
J. A. Wallace, Columbus, O.	The Pope	First	10 00
Cobb Gavitt, Ashley, O.		Second	5 00
Mare 3 Years Old or Over.			
Cobb Gavitt, Ashley, O.		First	15 00
Same		Second	8 00
Mare 2 Years Old and Under 3.			
Cobb Gavitt, Ashley, O.		First	10 00
W. E. Smith, Mt. Vernon, O.	Topsy	Second	5 00
Filly Under 2 Years.			
W. E. Smith, Mt. Vernon, O.	Eva	First	5 00

Judge—A. H. Miller.

IN HARNESS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Single Turnout.			
W. H. Ross, Columbus, O.	Mark	First	$10 00
Cobb Gavitt, Ashley, O.		Second	5 00
Double Team Turnout.			
Cobb Gavitt, Ashley, O.		First	15 00
Same		Second	8 00
Four-In-Hand.			
Cobb Gavitt, Ashley, O.		First	15 00
Pony Under Saddle.			
E. L. McCollem, Agent, Columbus, O.	Toppy	First	8 00
Cobb Gavitt, Ashley, O.		Second	4 00

Judge—A. H. Miller.

SUMMARY OF THE RACES.

2:39 CLASS PACING—PURSE $300.

Entered By.	Name of Animal.	Heats.
B. F. Yates, Circleville, O.	Enolia	5 6 5
G. W. Lane, Newark, O.	Miss Emmitt	1 1 1
J. N. Welwood, Kenton, O.	Mabel R. Wilkes	6 4 4
A. C. West, Washington C. H., O.	Homer W	4 5 6
J. T. Deardoff, Lebanon, O.	Birdie B	3 2 2
B. B. Jones, Newark, O.	George Burns	2 3 3

Time—2:21¼, 2:19¼, 2:19½.

2:32 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.
R. W. Hipple, Marion, O.	White Wings	2 2 2 5
Belmont Farm, Xenia, O.	The Meteor	4 3 5 3
Oscar Timms, Columbus, O.	Sunline	8 8 7 7
W. R. Gault, Columbus, O.	Baxter	6 5 4 4
Z. Brewer, Columbus, O.	Mary Bales	1 6 Dr.
J. W. Townsley, Washington C. H., O.	Winnie Wright	3 1 1 1
Clell Rader, Williamsport, O.	Miss Princeton	5 7 6 6
J. H. Welwood, Kenton, O.	George Storm	7 4 3 2

Time—2:26¼, 2:28¼, 2:27¼, 2:29¼.

2:45 CLASS TROTTING—PURSE $300.

Entered By.	Name of Animal.	Heats.
Valentine Bros., Circleville, O.	Elemore	5 Dis.
H. D. Kyger, Darrtown, O.	Jule K	6 Dis.
G. F. Stambaugh, McGuffey, O.	Voltell	4 3 3
F. P. Mitchell, Philadelphia, Pa.	Antester	1 1 1
R. H. Saxton, Granville, O.	Idlewile	7 Dis.
Belmont Farm, Xenia, O.	Xenia Lady	2 2 2
John A. Hall, Columbus, O.	Frank T	3 4 4

Time—2:30, 2:29¼, 2:29¼.

2:23 CLASS PACING—PURSE $400.

Entered By.	Name of Animal.	Heats.
J. W. Saylor, Newark, O.	Jim F	5 4 4
A. K. Vail, Marysville, O.	Tom Payne	3 9 3
J. H. Welwood, Kenton, O.	Minnie Fisk	2 3 9
G. W. Glover, Cadiz, O.	Florence Nightingale	1 1 1
Chas. Mark, Seldon, O.	Bessie Costman	10 8 5
Mt. Sterling Stock Co., Mt. Sterling, Ky.	Atha A	4 2 2
J. I. Mee, Somerville, O.	Mabel Mee	9 Dr.
B. F. Yates, Circleville, O.	Thaddie Burns	7 7 7
F. Hayward, Columbus, O.	Online, Jr.	6 6 6
Clemmer & Johnson, Hicksville, O.	J. C. R.	8 5 8

Time—2:20¼, 2:19¼, 2:19¼.

2:21 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.
C. W. Mark, Seldon, O.	Glenwood M	9 9 8
C. L. Smith, Newark, O.	Ruth Evlin	8 5 6
J. H. Swisher, Newark, O.	Interurban	6 4 3
J. I. Mee, Somerville, O.	Tootsie A	5 7 4
F. R. Straight, Toledo, O.	Gold Lace	3 2 2
C. A. Valentine, Columbus, O.	Ben Potts	1 1 1
P. Yates, Waverly, O.	Tom Petty	2 6 9
C. W. Igo, Payne, O.	Artha Czar	7 3 5
Mt. Sterling Stock Co., Mt. Sterling, Ky.	Boltacrat	4 8 7

Time— 2:20¼, 2:20¼, 2:21.

2:27 CLASS PACING—PURSE $400.

Entered By.	Name of Animal.	Heats.
John A. Hall, Columbus, O.	Purity	1 1 1
B. F. Yates, Circleville, O.	Thaddie Burns	4 4 3
Sawyer Bros., Bucyrus, O.	Ledrum	3 3 4
F. E. Freeman, Phoneton, O.	Ginger	2 2 2

Time—2:19¼, 2:19¼, 2:19½.

2:29 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.
J. S. Karns, Canal Dover, O.	Tullus	3 3 1 1 3 1
W. R. Gault, Columbus, O.	Baxter	6 4 4 4 4
J. W. Adrian, Pontiac, Ill.	Oxford	5 5 5 5 Dr.
Dan Lake, Bucyrus, O.	Kathryn	2 1 3 3 2 2
Belmont Farm, Xenia, O.	The Meteor	1 2 2 2 1 3
Jas. Phillips, Lima, O.	Honey's Son	4 6 6 6 5

Time—2:27¼, 2:27¼, 2:26¼, 2:26¼, 2:27¼, 2:26¼.

2:15 CLASS PACING—PURSE $400.

Entered By.	Name of Animal.	Heats.
N. E. Van Atta, Newark, O.	Nata B	2 5 1 2 2 2
F. G. Stillings, Milford Center, O.	Roxie T	1 1 5 5 4 3
Sanderson & Chaffie, Washington C. H., O.	Edwin C	3 4 4 4 5
J. W. Adrian, Pontiac, Ill.	Ballenger	5 3 6 6 Dr.
Sawyer Bros., Bucyrus, O.	Allie Leap	4 2 3 3 3
C. A. Valentine, Columbus, O.	Hazel Banks	6 6 2 1 1 1

Time—2:14¼, 2:15½, 2:14¼, 2:14¼, 2:16, 2:19½,

2:26 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.
C. W. Hoopes, Marysville, O.	Belle Hoopes	1 1 4 5 2 1
E. M. Heathman, Dayton, O.	March Wind	5 5 1 6 1 3
O. S. Jones, Columbus, O.	Daisy M	4 4 3 1 4 2
Joe Christ, Toledo, O.	Carrie Nation	2 2 2 2 3
W. H. Foster, Marion, O.	Ed Robey	6 6 5 4 5
J. I. Mee, Somerville, O.	Mojval	3 3 6 3 Dis.

Time—2:22¼, 2:23¾, 2:25¼, 2:26¼, 2:27½, 2:25¼.

2:19 CLASS PACING—PURSE $400.

Entered By.	Name of Animal.	Heats.
C. Price, Bellevue, O.	Electric Light	5 3 10
H. G. Miller, Newark, O.	Jno. R. Gentry, Jr.	4 4 3
C. A. Valentine, Columbus, O.	Bonnie Patchen	10 12 2
Maple Leaf Farm, South Charleston, O.	Colonel Colt	9 7 11
J. W. Boardman, Paris, Ky.	Westye B	8 10 12
J. T. Deardoff, Lebanon, O.	Lady Brooks	7 6 6
Powell & Stewart, Urbana, O.	St. Patrick Belle	2 9 8
S. C. Phillips, Washington C. H., O.	Nancy M	3 5 9
John Johnson, New Holland, O.	Ilo	12 8 4
Mt. Sterling Stock Co., Mt. Sterling, Ky.	Aircassel	11 11 7
Langel & Kramer, Basil, O.	Harry K	6 2 5
G. W. Glover, Cadiz, O.	Florence Nightingale	1 1 1

Time—2:17¼, 2:17½, 2:15¼.

2:17 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.
Al Seaton, Urbana, O.	Supera	6 5 5
G. B. Smith, Pittsburg, Pa.	Blanche K	1 1 1
J. M. Girton, South Lebanon, O.	Aliped	3 6 4
J. A. Hall, Columbus, O.	Brownie Wilton	2 2 3
G. W. Richardson, Columbus, O.	Stockton	4 4 2
James Phillips, Lima, O.	Honeymoon	5 3 6

Time—2:19¼, 2:18½, 2:17¼.

2:45 CLASS PACING—PURSE $300.

Entered By.	Name of Animal.	Heats.
F. E. Freeman, Phoneton, O.	Daisy Wilkes	2 3 2
G. W. Willett, North Lewisburg, O.	Veto	6 5 5
Richard Nichol, Marysville, O.	White Line	3 4 6
G. W. Lane, Newark, O.	Patentright	5 6 3
S. T. Boord, Worthington, O.	Dick Basler	1 1 1
B. F. Yates, Circleville, O.	Enolia	4 2 4

Time—2:22¼, 2:23¼, 2:24¼.

2:37 CLASS TROTTING—PURSE $400.

Entered By.	Name of Animal.	Heats.		
J. H. Wellwood, Kenton, O.	George Storm	2	3	2
J. W. Townsley, Washington C. H., O.	Winnie Right	1	1	1
Scott Vance, Kenton, O.	Daumillion	4	2	8
J. A. Hall, Columbus, O.	Frank T	5	8	9
Belmont Farm, Xenia, O.	Xenia Lady	3	5	3
Oscar Timms, Columbus, O.	Sunshine	8	9	6
S. P. Cure, Wilmington, O.	Bessie E	6	4	4
Clell Rader, Williamsport, O.	Miss Princeton	9	6	5
F. P. Mitchell, Philadelphia, Pa.	Antester	7	7	7

Time—2:25¼, 2:24¼, 2:25¼.

2:33 CLASS PACING—PURSE $400.

Entered By.	Name of Animal.	Heats.		
B. B. Jones, Newark, O.	George Burns	2	3	4
G. W. Lane, Newark, O.	Miss Emmitt	4	5	3
J. H. Wellwood, Kenton, O.	Mabel R. Wilkes	5	4	5
J. A. Hall, Columbus, O.	Purity	1	1	1
F. E. Freeman, Phoneton, O.	Ginger	3	2	2

Time—2:17¼, 2:19¾, 2:19½.

SECOND DEPARTMENT—CATTLE.

J. S. STUCKEY, Member in charge.

SHORTHORNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
A. W. Hodge, New Moorefield, O.	Gold Vesture	First	$15 00
Bull 2 Years Old and Under 3.			
J. A. Gerlaugh, Harshman, O.	Pride of Clans	First	15 00
C. Hintz & Son, Fremont, O.	Royal Hero	Second	10 00
Bull 1 Year Old and Under 2.			
J. A. Gerlaugh, Harshman, O.	Fine Morning	First	15 00
J. G. Robins & Sons, Horace, Ind.	Synonym	Second	10 00
A. W. Hodge, New Moorefield, O.	Roosevelt	Third	5 00
Bull Under 1 Year Old.			
C. Hintz & Son, Fremont, O.	Scottish	First	15 00
J. A. Gerlaugh, Harshman, O.	Roy Marengo	Second	10 00
C. Hintz & Son, Fremont, O.	Royal Chief	Third	5 00
Cow 3 Years Old or Over			
C. Hintz & Sons, Fremont, O.	British Lady	First	15 00
J. A. Gerlaugh, Harshman, O.	Ruth VIII	Second	10 00
C. Hintz & Son, Fremont, O.	Verbenia's Dandy	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
J. G. Robins & Sons, Horace, Ind.	Lad's Rose	First	15 00
J. A. Gerlaugh, Harshman, O.	Coleus	Second	10 00
J. G. Robins & Sons, Horace, Ind.	Lad's Lady	Third	5 00
Heifer 1 Year Old and Under 2.			
J. G. Robins & Sons, Horace, Ind.	Missie	First	15 00
Same	Secret	Second	10 00
C. Hintz & Son, Fremont, O.	Sweet Beauty	Third	5 00
Heifer Under 1 Year Old.			
J. G. Robins & Sons, Horace, Ind.	Clarette	First	15 00
Same	Lad's Emma	Second	10 00
J. A. Gerlaugh, Harshman, O.	Archirena	Third	5 00
C. Hintz & Son, Fremont, O.	Wild Duchess Mary IV	Fourth	3 00
Same	Clarat	Fifth	5 00
Exhibitors' Graded Herd.			
J. A. Gerlaugh, Harshman, O.		First	30 00
C. Hintz & Son, Fremont, O.		Second	20 00
Breeders' Young Herd.			
J. G. Robins & Sons, Horace, Ind.		First	30 00
C. Hintz & Son, Fremont, O.		Second	20 00
Get of Sire—Four Animals, Either Sex, Under 4 Years Old.			
J. G. Robins & Sons, Horace, Ind.		First	20 00
C. Hintz & Son, Fremont, O.		Second	12 00

SHORTHORNS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Produce of Cow—Two Animals, Either Sex, Under 4 Years Old.			
C. Hintz & Son, Fremont, O.		First	$15 00
Produce of Cow—Four Animals, Either Sex. Under 4 Years Old.			
C. Hintz & Son, Fremont, O.		First	20 00

NOTE—The above premium awards were duplicated by the American Shorthorn Breeders' Association.

HEREFORDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
Wm. Kerby, Kokomo, Ind.	Actor	First	$15 00
Grinnell & Fogg, Yellow Springs, O.	Pluto	Second	10 00
Bull 2 Years Old and Under 3.			
W. H. Curtice, Eminence, Ky.	Beau Donald 39th	First	15 00
Same	Beau Donald 48th	Second	10 00
Grinnell & Fogg, Yellow Springs, O.	Beau Donald 42nd	Third	5 00
Bull 1 Year Old and Under 2.			
W. H. Curtice, Eminence, Ky.	Prince Rupert 8th	First	10 00
S. W. Anderson, Blaker Mills, W. Va.	Marmaduke V	Second	5 00
W. H. Curtice, Eminence, Ky.	Rex Premier	Third	3 00
Bull Under 1 Year Old.			
W. H. Curtice, Eminence, Ky.	Beau Donald 58th	First	10 00
Same	Beau Donald 57th	Second	5 00
S. W. Anderson, Blaker Mills, W. Va.	Garnet	Third	3 00
Cow 3 Years Old or Over.			
W. H. Curtice, Eminence, Ky.	Belle Donald 28th	First	15 00
Same	Belle Donald 44th	Second	10 00
S. W. Anderson, Blaker Mills, W. Va.	Miss Peerless	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
W. H. Curtice, Eminence, Ky.	Belle Donald 56th	First	15 00
Same	Belle Donald	Second	10 00
S. W. Anderson, Blaker Mills, W. Va.	Anita 2nd	Third	5 00
Heifer 1 Year Old and Under 2.			
W. H. Curtice, Eminence, Ky.	Belle Donald 61st	First	10 00
Same	Belle Donald 59th	Second	5 00
Wm. Kerby, Kokomo, Ind.	Kna	Third	3 00
Heifer Under 1 Year Old.			
W. H. Curtice, Eminence, Ky.	Belle Donald 77	First	10 00
Same	Belle Donald 69	Second	5 00
S. W. Anderson, Blaker Mills, W. Va.	Alexia	Third	3 00
Exhibitors' Graded Herd.			
W. H. Curtice, Eminence, Ky.		First	30 00
Same		Second	15 00

HEREFORDS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Breeders' Young Herd.			
W. H. Curtice, Eminence, Ky.		First	$30 00
S. W. Anderson, Blaker Mills, W. Va.		Second	15 00
Get of Sire—Four Animals, Either Sex, Under 4 Years Old.			
W. H. Curtice, Eminence, Ky.		First	20 00
Same		Second	10 00
Produce of Cow—Two Animals, Either Sex, Under 4 Years Old.			
W. H. Curtice, Eminence, Ky.		First	10 00
Same		Second	5 00

NOTE—The American Hereford Breeders' Association made a special offer of $300, added pro rata to the above awards.

DEVONS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
U. B. Moyer, Mt. Cory, O.	Ben's Choice	First	$15 00
James Hilton, New Scotland, N. Y.	Patriarch	Second	10 00
G. A. McMillen, Galligher, O.	Henry R	Third	5 00
Bull 2 Years Old and Under 3.			
U. B. Moyer, Mt. Cory, O.	Roy	First	15 00
James Hilton, New Scotland, N. Y.	Hamlet	Second	10 00
W. E. Lewis, Troy, O.	Benton L 2nd	Third	5 00
Bull 1 Year Old and Under 2.			
W. E. Lewis, Troy, O.	Muggins	First	10 00
G. A. McMillen, Galligher, O.	Robbie	Second	5 00
U. B. Moyer, Mt. Cory, O.	Dandy	Third	3 00
Bull Under 1 Year Old.			
U. B. Moyer, Mt. Cory, O.	Look Out	First	10 00
W. H. Davis, Mendota, Ill.	Happy Boy	Second	5 00
G. A. McMillen, Galligher, O.	Ashland	Third	3 00
Cow 3 Years Old or Over			
U. B. Moyer, Mt. Cory, O.	Cherry M	First	15 00
Same	Bright Promise	Second	10 00
J. Hilton, New Scotland, N. Y.	Pretty Pet	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
U. B. Moyer, Mt. Cory, O.	Babe	First	15 00
W. E. Lewis, Troy, O.	Charlotte L	Second	10 00
W. H. Davis, Mendota, Ill.	Welsh Beauty	Third	5 00
Heifer 1 Year Old and Under 2.			
U. B. Moyer, Mt. Cory, O.	P. of Woodland	First	10 00
W. E. Lewis, Troy, O.	Bernice L	Second	5 00
J. Hilton, New Scotland, N. Y.	Portia	Third	3 00
Heifer Under 1 Year Old.			
J. Hilton, New Scotland, N. Y.	D. of Devondale	First	10 00
C. C. Shaw & Son, Newark, O.		Second	5 00
W. H. Davis, Mendota, Ill.	Grace	Third	3 00

DEVONS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Exhibitors' Graded Herd.			
U. B. Moyer, Mt. Cory, O.		First	$30 00
J. Hilton, New Scotland, N. Y.		Second	15 00
Breeders' Young Herd.			
W. E. Lewis, Troy, O.		First	30 00
G. A. McMillen, Galligher, O.		Second	15 00
Get of Sire—Four Animals, Either Sex Under 4 Years Old.			
J. Hilton, New Scotland, N. Y.		First	20 00
W. E. Lewis, Troy, O.		Second	10 00
Produce of Cow—Two Animals, Either Sex, Under 4 Years Old (Produce of One Cow).			
U. B. Moyer, Mt. Cory, O.		First	10 00
W. E. Lewis, Troy, O.		Second	5 00

ABERDEEN ANGUS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
O. G. Callahan, Helena, Ky.	Lord Fretful	First	$15 00
D. Bradfute & Son, Cedarville, O.	Valiant Knight	Second	10 00
H. M. Brown, Hillsboro, O.	Blocky Fellow	Third	5 00
Bull 2 Years Old and Under 3.			
D. Bradfute & Son, Cedarville, O.	Lucy's Prince	First	15 00
T. Mattison, Jr., South Charleston, O.	Black Jack 4	Second	10 00
O. T. Wolford, Xenia, O.	William	Third	5 00
Bull 1 Year Old and Under 2.			
T. Mattison, Jr., South Charleston, O.	Hero of Miami	First	10 00
O. T. Wolford, Xenia, O.	Dick	Second	5 00
T. Mattison, Jr., South Charleston, O.	Gay Lad M.	Third	3 00
Bull Under 1 Year Old.			
D. Bradfute & Son, Cedarville, O.	Gay Lad 3rd	First	10 00
Same		Second	5 00
O. T. Wolford, Xenia, O.	Uncle Sam	Third	3 00
Cow 3 Years Old or Over			
O. G. Callahan, Helena, Ky.	Anna of Rockfield	First	15 00
D. Bradfute & Son, Cedarville, O.	Bertha	Second	10 00
Same	Anice	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
O. G. Callahan, Helena, Ky.	Black Bird	First	15 00
D. Bradfute & Son, Cedarville, O.	Boneta 2nd	Second	10 00
H. M. Brown, Hillsboro, O.	Lucile	Third	5 00
Heifer 1 Year Old and Under 2.			
O. T. Wolford, Xenia, O.	Grace	First	10 00
O. G. Callahan, Helena, Ky.	Early Hill	Second	5 00
O. T. Wolford, Xenia, O.	Sallie	Third	3 00

ABERDEEN ANGUS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Helfer Under 1 Year Old.			
D. Bradfute & Son, Cedarville, O.........	Tishka	First	$10 00
O. G. Callahan, Helena, Ky...............	Jessie	Second ...	5 00
D. Bradfute & Son, Cedarville, O.........	Blanche	Third	3 00
Exhibitors' Graded Herd.			
O. G. Callahan, Helena, Ky...............	....	First	30 00
D. Bradfute & Son, Cedarville, O..........	....	Second ...	15 00
Breeders' Young Herd.			
D. Bradfute & Son, Cedarville, O.........	....	First	30 00
O. G. Callahan, Helena, Ky...............	....	Second ...	15 00
Get of Sire—Four Animals, Either Sex, Under 4 Years Old.			
D. Bradfute & Son, Cedarville, O.........	....	First	20 00
T. Mattison, Jr., South Charleston, O....	....	Second ...	10 00
Produce of Cow—Two Animals, Either Sex, Under 4 Years Old.			
D. Bradfute & Son, Cedarville, O.........	....	First	10 00
O. T. Wolford, Xenia, O..................	....	Second ...	5 00

NOTE—To the above class premiums the American Aberdeen-Angus Breeders' Association added a total of $300.

GALLOWAYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount
Bull 3 Years Old or Over.			
J. Frantz, Bluffton, O.......................	Ramble of Corn Belt..	First	$15 00
Bull 2 Years Old and Under 3.			
J. Frantz, Bluffton, O.......................	Norman King	First	15 00
Bull 1 Year Old and Under 2.			
J. Frantz, Bluffton, O.......................	Gambler of M. G.....	First	10 00
Same	Merlin of M. G.........	Second ...	5 00
Bull Under 1 Year Old.			
J. Frantz, Bluffton, O.......................	Farman of M. G.......	First	10 00
F. Ruhlin, Columbus, O....................	Black Prince	Second ...	5 00
Same	Baby Boy	Third	3 00
Cow 3 Years Old or Over			
J. Frantz, Bluffton, O.......................	Lady Kingston	First	15 00
Same	Violet	Second ...	10 00
Cow or Heifer 2 Years Old and Under 3.			
J. Frantz, Bluffton, O.......................	Queen	First	15 00
Same	Alta	Second ...	10 00
Heifer 1 Year Old and Under 2.			
J. Frantz, Bluffton, O.......................	Maid	First	10 00
Same	Beauty	Second ...	5 00

GALLOWAYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Heifer Under 1 Year Old.			
J. Frantz, Bluffton, O.	Princess	First	$10 00
Same	Vesta	Second	5 00
Exhibitors' Graded Herd.			
J. Frantz, Bluffton, O.		First	30 00
Breeders' Young Herd.			
J. Frantz, Bluffton, O.		First	30 00
Get of Sire—Four Animals, Either Sex Under 4 Years Old.			
J. Frantz, Bluffton, O.		First	20 00
Produce of Cow—Two Animals, Eithe Sex, Under 4 Years Old.			
J. Frantz, Bluffton, O.		First	10 00

POLLED DURHAMS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
A. C. Wood & Sons, Pendleton, Ind.	Golden Hero	First	$25 00
F. S. Hines, Malott Park, Ind.	Tippecanoe 44	Second	15 00
J. N. Woods & Son, Gardner, Ill.	Stillwater Diamond	Third	10 00
Bull 2 Years Old and Under 3.			
R. B. Guy, Mechanicsburg, O.	Ohio Boy	First	25 00
J. N. Woods & Son, Gardner, Ill.	Tippecanoe 53	Second	15 00
Wm. Tossey, Marysville, O.	Mill Creek Bay	Third	10 00
Bull 1 Year Old and Under 2.			
F. S. Hines, Malott Park, Ind.	Prince Charming	First	15 00
A. C. Wood & Sons, Pendleton, Ind.	London Hero	Second	10 00
Same	Scottish Hero	Third	5 00
Bull Under 1 Year Old.			
R. B. Guy, Mechanicsburg, O.	Cherry Boy	First	15 00
J. N. Woods & Son, Gardner, Ill.	Tippecanoe 75	Second	10 00
Wm. Tossey, Marysville, O.	Laddie	Third	5 00
Cow 3 Years Old or Over.			
F. S. Hines, Malott Park, Ind.	Ruby of B.	First	25 00
Wm. Tossey, Marysville, O.	Fancy	Second	15 00
A. C. Wood & Sons, Pendleton, Ind.	Agate	Third	10 00
Cow or Heifer 2 Years Old and Under 3.			
F. S. Hines, Malott Park, Ind.	Ruby of B 2nd	First	25 00
Wm. Tossey, Marysville, O.	Iota	Second	15 00
Same	Omega	Third	10 00
Heifer 1 Year Old and Under 2.			
F. S. Hines, Malott Park, Ind.	Kirk L. A.	First	15 00
J. N. Woods & Son, Gardner, Ill.	Magnet 3rd	Second	10 00
F. S. Hines, Malot Park, Ind.	B. Ophelia	Third	5 00

POLLED DURHAMS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Heifer Under 1 Year Old.			
J. N. Woods & Son, Gardner, Ill.	Golden Lady	First	$15 00
A. C. Wood & Sons, Pendleton, Ill.	Pride's Princess	Second	10 00
F. S. Hines, Malott Park, Ind.	Zaddal	Third	5 00
Exhibitors' Graded Herd.			
F. S. Hines, Malott Park, Ind.		First	40 00
A. C. Wood & Sons, Pendleton, Ind.		Second	25 00
Breeders' Young Herd.			
F. S. Hines, Malott Park, Ind.		First	40 00
J. N. Woods & Son, Gardner, Ill.		Second	20 00
Get of Sire—Four Animals, Either Sex, Under 4 Years Old.			
Wm. Tossey, Marysville, O.		First	30 00
A. C. Wood & Sons, Pendleton, Ind.		Second	20 00
Produce of Cow—Two Animals, Either Sex, Under 4 Years Old.			
Wm. Tossey, Marysville, O.		First	20 00
A. C. Wood & Sons, Pendleton, Ind.		Second	12 00

NOTE—Of the above premiums awarded, the American Polled Durham Breeders' Association contributed the sum of $200.

RED POLLS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
Andrew Bros., Cedarville, O.	Prince Portier	First	$15 00
F. Hartline, Strasburg, O.	Nash	Second	10 00
W. P. Whittier, Galena, O.	Privateer	Third	5 00
Bull 2 Years Old and Under 3.			
Andrew Bros., Cedarville, O.	Vernon 2nd	First	15 00
F. Hartline, Strasburg, O.	Eclipse	Second	10 00
Bull 1 Year Old and Under 2.			
Andrew Bros., Cedarville, O.	King Henry	First	10 00
F. Hartline, Strasburg, O.	Empire	Second	5 00
Bull Under 1 Year Old.			
Andrew Bros., Cedarville, O.	Nonine	First	10 00
F. Hartline, Strasburg, O.	Granger	Second	5 00
Andrew Bros., Cedarville, O.	Duke	Third	3 00
Cow 3 Years Old or Over			
Andrew Bros., Cedarville, O.	Alma	First	15 00
F. Hartline, Strasburg, O.	Petis Davy	Second	10 00
Same	Orthodox	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
Andrew Bros., Cedarville, O.	Cherry	First	15 00
F. Hartline, Strasburg, O.	Celia	Second	10 00
Andrew Bros., Cedarville, O.	Ina	Third	5 00
Heifer 1 Year Old and Under 2.			
Andrew Bros., Cedarville, O.	Goldie	First	10 00
F. Hartline, Strasburg, O.	Carrie	Second	5 00
Andrew Bros., Cedarville, O.	Belle W	Third	3 00

RED POLLS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Heifer Under 1 Year Old.			
Andrew Bros., Cedarville, O.	Golden Rod	First	$10 00
Same	Aurilla	Second	5 00
F. Hartline, Strasburg, O.	Lottie	Third	3 00
Exhibitors' Graded Herd.			
Andrew Bros., Cedarville, O.		First	30 00
F. Hartline, Strasburg, O.		Second	15 00
Breeders' Young Herd.			
Andrew Bros., Cedarville, O.		First	30 00
F. Hartline, Strasburg, O.		Second	15 00
Get of Sire—Four Animals, Either Sex, Under 4 Years Old.			
Andrew Bros., Cedarville, O.		First	20 00
F. Hartline, Strasburg, O.		Second	10 00
Produce of Cow—Two Animals, Either Sex, Under 4 Years Old.			
Andrew Bros., Cedarville, O.		First	10 00
F. Hartline, Strasburg, O.		Second	5 00

HOLSTEINS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
W. B. Smith & Son, Columbus, O.	Homestead C. P. D.	First	$15 00
F. G. Johnson & Co., Columbus, O.	Rosa Bonhem	Second	10 00
Bull 2 Years Old and Under 3.			
W. B. Smith & Son, Columbus, O.	Heils B. B. B.	First	15 00
Bull Under 1 Year Old.			
F. G. Johnson & Co., Columbus, O.	Belle Vernon P. D.	First	10 00
W. B. Smith & Son, Columbus, O.	Johanna	Second	5 00
Same	Inspiration	Third	3 00
Cow 3 Years Old or Over.			
W. B. Smith & Son, Columbus, O.	Kate Spray	First	15 00
Same	Viola M. M.	Second	10 00
F. G. Johnson & Co., Columbus, O.	Tiranna 3rd P.	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
W. B. Smith & Son, Columbus, O.	Lois Clothilde	First	15 00
Same	Aagie M. K.	Second	10 00
Same	Aagie M. C.	Third	5 00
Heifer 1 Year Old and Under 2.			
W. B. Smith & Son, Columbus, O.	We Said	First	10 00
F. G. Johnson & Co., Columbus, O.	Dekol Bonheur	Second	5 00
W. B. Smith & Son, Columbus, O.	Thinkum	Third	3 00
Heifer Under 1 Year Old.			
W. B. Smith & Son, Columbus, O.	Inspiration 4th	First	10 00
F. G. Johnson & Co., Columbus, O.	Wilhelmina D. B.	Second	5 00
W. B. Smith & Son, Columbus, O.	Kate Spray 4th	Third	3 00

HOLSTEINS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Exhibitors' Graded Herd.			
W. B. Smith & Son, Columbus, O.		First	$30 00
F. G. Johnson & Co., Columbus, O.		Second	15 00
Breeders' Young Herd.			
W. B. Smith & Son, Columbus, O.		First	30 00
F. G. Johnson & Co., Columbus, O.		Second	15 00
Get of Sire—Four Animals, Either Sex, Under 4 Years Old.			
W. B. Smith & Son, Columbus, O.		First	20 00
F. G. Johnson & Co., Columbus, O.		Second	10 00
Produce of Cow—Two Animals, Either Sex, Under 4 Years Old.			
W. B. Smith & Son, Columbus, O.		First	10 00
F. G. Johnson & Co., Columbus, O.		Second	5 00

DUTCH BELTED.

Owner's Name and Postoffice.	Name of Animal.	Premiun.	Amount.
Bull 3 Years Old or Over.			
F. R. Sanders, Tacoma, N. H.	Sutton	First	$15 00
J. W. Swab, Findlay, O.	David Harum	Second	10 00
Bull 2 Years Old and Under 3.			
F. R. Sanders, Tacoma, N. H.	John Bull	First	15 00
Bull 1 Year Old and Under 2.			
F. R. Sanders, Tacoma, N. H.	David 2nd	First	10 00
J. W. Swab, Findlay, O.	Diaz	Second	5 00
Bull Under 1 Year Old.			
J. W. Swab, Findlay, O.		First	10 00
F. R. Sanders, Tacoma, N. H.	Jupiter	Second	5 00
J. W. Swab, Findlay, O.		Third	3 00
Cow 3 Years Old or Over.			
F. R. Sanders, Tacoma, N. H.	Trilby	First	15 00
J. W. Swab, Findlay, O.	Morning Glory	Second	10 00
Same	Grace Viola	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
F. R. Sanders, Tacoma, N. H.	Countess Rose	First	15 00
J. W. Swab, Findlay, O.	Emma E	Second	10 00
Same	Lady White Foot	Third	5 00
Heifer 1 Year Old and Under 2.			
F. R. Sanders, Tacoma, N. H.	Sophia's Pride	First	10 00
J. W. Swab, Findlay, O.	Fannie B	Second	5 00
F. R. Sanders, Tacoma, N. H.	Luna	Third	3 00
Heifer Under 1 Year Old.			
J. W. Swab, Findlay, O.	Bessie S	First	10 00
F. R. Sanders, Tacoma, N. H.	Clarissa	Second	5 00
J. W. Swab, Findlay, O.	Hazel S	Third	3 00

DUTCH BELTED—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Exhibitors' Graded Herd.			
F. R. Sanders, Tacoma, N. H.		First	$30 00
J. W. Swab, Findlay, O.		Second	15 00
Breeders' Young Herd.			
F. R. Sanders, Tacoma, N. H.		First	30 00
J. W. Swab, Findlay, O.		Second	15 00

BROWN SWISS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
F. R. Hazard, Syracuse, N. Y.	Supreme	First	$15 00
Bull 2 Years Old and Under 3.			
F. R. Hazard, Syracuse, N. Y.	Upland Hobby	First	15 00
Hull Bros., Perry, O.	Peter Scott	Second	10 00
F. R. Hazard, Syracuse, N. Y.	Upland Duke	Third	5 00
Bull 1 Year Old and Under 2.			
F. R. Hazard, Syracuse, N. Y.	Upland Jethro	First	10 00
Same	Upland Nyon	Second	5 00
Bull Under 1 Year Old.			
F. R. Hazard, Syracuse, N. Y.	Upland Dubois	First	10 00
Same	Upland Jehn	Second	5 00
Hull Bros., Perry, O.	Conniver	Third	3 00
Cow 3 Years Old or Over.			
F. R. Hazard, Syracuse, N. Y.	Florine of River Meadow	First	15 00
Same	Florine of River Meadow XII	Second	10 00
Hull Bros., Perry, O.	Bethlehem	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
Hull Bros., Perry, O.	Pride of Low Lands	First	15 00
F. R. Hazard, Syracuse, N. Y.	Katharine M	Second	10 00
Hull Bros., Perry, O.	American Girl	Third	5 00
Heifer 1 Year Old and Under 2.			
Hull Bros., Perry, O.	Perry Maid	First	10 00
F. R. Hazard, Syracuse, N. Y.	Upland Eliza B.	Second	5 00
Same	Upland Florine	Third	3 00
Heifer Under 1 Year Old.			
Hull Bros., Perry, O.	Valley Girl II.	First	10 00
F. R. Hazard. Syracuse, N. Y.	Eliza of River Meadow	Second	5 00
Same	Upland Lady B.	Third	3 00
Exhibitors' Graded Herd.			
F. R. Hazard, Syracuse, N. Y.			
Hull Bros., Perry, O.		Second	15 00
Breeders' Young Herd.			
F. R. Hazard, Syracuse, N. Y.		First	30 00
Hull Bros., Perry, O.		Second	15 00

JERSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
Goldmont Herd (N. F. Berry, Proprietors., Lexington, Ky.	Bobby's Shy Fox	First	$15 00
P. A. Pugh & Sons, New Cumberland. W. Va.	King Downie	Second	10 00
J. M. Hodson, Montpelier, O.	Spring Brook's Exile	Third	5 00
Bull 2 Years Old and Under 3.			
Lewis Dininger & Son, Greenville, O.	Herbert of St. Albans.	First	15 00
P. A. Pugh & Sons, New Cumberland W. Va.	Jeff of Gas Valley	Second	10 00
J. M. Hodson, Montpelier, O.	Beauty's Best Son	Third	5 00
Bull 1 Year Old and Under 2.			
Goldmont Herd, Lexington, Ky.	Belle Egyptian's Fern Lad	First	10 00
P. A. Pugh & Sons, New Cumberland W. Va.	Mangold Stake Pogis	Second	5 00
Same	Santy of Gas Valley	Third	3 00
Bull Under 1 Year Old.			
P. A. Pugh & Sons, New Cumberland, W. Va.	Frank of Gas Valley	First	10 00
Goldmont Herd, Lexington, Ky.	Prussian Lad	Second	5 00
P. A. Pugh & Sons, New Cumberland. W. Va.	Harry of Gas Valley	Third	3 00
Cow 3 Years Old or Over.			
Goldmont Herd, Lexington, Ky.	Golden Fern's Sensation	First	$15 00
Same	Chatagay	Second	10 00
J. M. Hodson, Montpelier, O.	Bright Eye's Lady	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
Goldmont Herd, Lexington, Ky.	Fox's Golden Buttercup	First	15 00
J. M. Hodson, Montpelier, O.	Spring Brook Bonnie	Second	10 00
Lewis Dininger & Son, Greenville, O.	Lady Treva	Third	5 00
Heifer Under 1 Year Old and Under 2.			
J. M. Hodson, Montpelier, O.		First	10 00
P. A. Pugh & Sons, New Cumberland W. Va.	Delta of Gas Valley	Second	5 00
Same	Olive of Gas Valley	Third	3 00
Heifer Under 1 Year Old.			
Goldmont Herd, Lexington, Ky.	Elsie Belle	First	10 00
P. A. Pugh & Sons, New Cumberland. W. Va.	Pink of Gas Valley	Second	5 00
Goldmont Herd, Lexington, Ky.	Fox's Golden Crown	Third	3 00
Exhibitors' Graded Herd.			
Goldmont Herd, Lexington, Ky.		First	30 00
Lewis Dininger & Son, Greenville, O.		Second	15 00
P. A. Pugh & Sons, New Cumberland W. Va.		Third	Ribbon.
Breeders' Young Herd.			
P. A. Pugh & Sons, New Cumberland. W. Va.		First	30 00
J. M. Hodson, Montpelier, O.		Second	15 00

JERSEYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Get of Sire—Four Animals, Either Sex, Under 4 Years Old.			
P. A. Pugh & Sons, New Cumberland, W. Va.	....	First	$20 00
Lewis Dininger & Son, Greenville, O.	....	Second	10 00
J. M. Hodson, Montpelier, O.	....	Third	Ribbon.
Produce of Cow—Two Animals, Either Sex, Under 4 Years Old.			
P. A. Pugh & Sons, New Cumberland W. Va.	....	First	10 00
J. M. Hodson, Montpelier, O.	....	Second	5 00
Lewis Dininger & Son, Greenville, O.	....	Third	Ribbon.

The Ohio Jersey Cattle Club made special offers for animals owned and bred by Ohio exhibitors, and holding membership for 1903 in the Ohio Jersey Cattle Club.

POLLED JERSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premiun.	Amount.
Bull 3 Years Old or Over.			
Jas. R. Orr & Co., Cedarville, O.	Nomica	First	$15 00
W. H. Forbes & Co., Clifton, O.	Clipper	Second	10 00
Same	Comet	Third	5 00
Bull 2 Years Old and Under 3.			
Jas. R. Orr & Co, Cedarville, O.	Luna's Pride	First	15 00
W. H. Forbes & Co., Clifton, O.	Buffalo Boy	Second	10 00
Bull 1 Year Old and Under 2.			
Jas. R. Orr & Co, Cedarville, O.	Circlette	First	10 00
W. H. Forbes & Co., Clifton, O.	Jeffersonian	Second	5 00
Jas. R. Orr & Co, Cedarville, O.	Oh Tell	Third	3 00
Bull Under 1 Year Old.			
W. H. Forbes & Co., Clifton, O.	....	First	10 00
Jas. R. Orr & Co, Cedarville, O.	Gem's Goldie	Second	5 00
W. H. Forbes & Co., Clifton, O.	King	Third	3 00
Cow 3 Years Old or Over.			
W. H. Forbes & Co., Clifton, O.	Minnie S	First	15 00
Jas. R. Orr & Co, Cedarville, O.	Gem	Second	10 00
Jas. R. Orr & Co, Cedarville, O.	Roseta	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
W. H. Forbes & Co., Clifton, O.	Stella	First	15 00
Jas. R. Orr & Co, Cedarville, O.	Ola	Second	10 00
Same	Favorite's Prida	Third	5 00
Heifer 1 Year Old and Under 2.			
W. H. Forbes & Co., Clifton, O.	Duchess	First	10 00
Jas. R. Orr & Co, Cedarville, O.	Varley	Second	5 00
Same.	Monica's Pretty Pink	Third	3 00
Heifer Under 1 Year Old.			
W. H. Forbes & Co., Clifton, O.	....	First	10 00
Jas. R. Orr & Co, Cedarville, O.	....	Second	5 00
Same	....	Third	3 00

POLLED JERSEYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Exhibitors' Graded Herd.			
W. H. Forbes & Co., Clifton, O		First	$30 00
Jas. R. Orr & Co., Cedarville, O		Second	15 00
Breeders' Young Herd.			
W. H. Forbes & Co., Clifton, O		First	30 00
Jas. R. Orr & Co., Cedarville, O		Second	15 00
Get of Sire—Breeders' Herd, Four Animals.			
Jas. R. Orr & Co., Cedarville, O		First	20 00
W. H. Forbes & Co., Clifton, O		Second	10 00
Produce of Cow—Two Animals, Either Sex.			
W. H. Forbes & Co., Clifton, O		First	10 00
Jas. R. Orr & Co., Cedarville, O		Second	5 00

GUERNSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
L. V. Axtell, Perry, O	Homestead's Golden Duke	First	$15 00
McCormick & Edgerly, Pataskala, O	Mills	Second	10 00
Bull 2 Years Old and Under 3.			
L. V. Axtell, Perry, O	Tully of Homestead	First	15 00
McCormick & Edgerly, Pataskala, O	Hisey	Second	10 00
Bull 1 Year Old and Under 2.			
McCormick & Edgerly, Pataskala, O	Daisy's Boy	First	10 00
L. V. Axtell, Perry, O	Success of Homestead	Second	5 00
Bull Under 1 Year Old.			
L. V. Axtell, Perry, O	Crown Prince of Homestead	First	10 00
McCormick & Edgerly, Pataskala, O	Odeta's Boy	Second	5 00
L. V. Axtell, Perry, O	Successor of Homestead	Third	3 00
Cow 3 Years Old or Over.			
McCormick & Edgerly, Pataskala, O	Carrie Nation	First	15 00
L. V. Axtell, Perry, O	Golden Annie	Second	10 00
Same	Countess of Level Green	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
L. V. Axtell, Perry, O	Frizette of Homestead	First	15 00
McCormick & Edgerly, Pataskala, O	Dora's Mildred II	Second	10 00
L. V. Axtell, Perry, O	Doubtful of Homestead	Third	5 00
Heifer 1 Year Old and Under 2.			
L. V. Axtell, Perry, O	Annie of Homestead	First	10 00
McCormick & Edgerly, Pataskala, O	Rose of Pataskala	Second	5 00
L. V. Axtell, Perry, O	Pride of Homestead	Third	3 00

GUERNSEYS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Heifer Under 1 Year Old.			
L. V. Axtell, Perry, O.		First	$10 00
McCormick & Edgerly, Pataskala, O.	Margarette	Second	5 00
L. V. Axtell, Perry, O.		Third	3 00
Exhibitors' Graded Herd.			
L. V. Axtell, Perry, O.		First	30 00
McCormick & Edgerly, Pataskala, O.		Second	15 00
Breeders' Young Herd.			
L. V. Axtell, Perry, O.		First	30 00
McCormick & Edgerly, Pataskala, O.		Second	15 00
Get of Sire—Four Animals, Either Sex Under 4 Years Old.			
L. V. Axtell, Perry, O.		First	20 00
McCormick & Edgerly, Pataskala, O.		Second	10 00
Produce of Cow—Two Animals, Either Sex, Under 4 Years Old.			
L. V. Axtell, Perry, O.		First	10 00
McCormick & Edgerly, Pataskala, O.		Second	5 00

AYRSHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Bull 3 Years Old or Over.			
J. F. Converse & Co., Woodville, N. Y.	Lord Fairfax	First	$15 00
W. P. Schanck, Avon, N. Y.	Signal Maple Grove	Second	10 00
McCormick & Edgerly, Pataskala, O.	White Chief	Third	5 00
Bull 2 Years Old and Under 3.			
Howard Cook, Beloit, O.	Dunraven of St. Anne	First	15 00
J. F. Converse & Co., Woodville, N. Y.	Netherwood Duke	Second	10 00
W. P. Schanck, Avon, N. Y.	Drummond of Avon	Third	5 00
Bull 1 Year Old and Under 2.			
W. P. Schanck, Avon, N. Y.	Major Barton	First	10 00
Howard Cook, Beloit, O.	Salem Lad	Second	5 00
McCormick & Edgerly, Pataskala, O.	Pataskala Duke	Third	3 00
Bull Under 1 Year Old.			
J. F. Converse & Co., Woodville, N. Y.	Telford Douglas	First	10 00
Howard Cook, Beloit, O.	Eli Douglas	Second	5 00
W. P. Schanck, Avon, N. Y.	Gypsey Prince	Third	3 00
Cow 3 Years Old or Over.			
J. F. Converse & Co., Woodville, N. Y.	Viola Drummond	First	15 00
Howard Cook, Beloit, O.	Merrit Kellogg	Second	10 00
McCormick & Edgerly, Pataskala, O.	Hassa III	Third	5 00
Cow or Heifer 2 Years Old and Under 3.			
McCormick & Edgerly, Pataskala, O.	Daisy of Pataskala	First	15 00
J. F. Converse & Co., Woodville, N. Y.	Netherwood Princess	Second	10 00
Howard Cook, Beloit, O.	Pearl Douglas	Third	5 00
Heifer 1 Year Old and Under 2.			
Howard Cook, Beloit, O.	Violet Douglas	First	10 00
J. F. Converse & Co., Woodville, N. Y.	Pan-American Girl	Second	5 00
W. P. Schanck, Avon, N. Y.	May Queen of Avon	Third	3 00

AYRSHIRES—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Heifer Under 1 Year Old.			
J. F. Converse & Co., Woodville, N. Y..	Gladys Drummond II..	First	$10 00
W. P. Schanck, Avon, N. Y...............	Vona of Avon..........	Second ...	5 00
Same	Nona of Avon...........	Third	3 00
Exhibitors' Graded Herd.			
J. F. Converse & Co., Woodville, N. Y..	....	First	30 00
Howard Cook, Beloit, O....................	....	Second ...	15 00
W. P. Schanck, Avon, N. Y...............	....	Third	Ribbon.
Breeders' Young Herd.			
W. P. Schanck, Avon, N. Y...............	....	First	30 00
J. F. Converse & Co., Woodville, N. Y..	....	Second ...	15 00
Howard Cook, Beloit, O....................	....	Third	Ribbon.
Get of Sire—Four Animals. Either Sex, Under 4 Years Old.			
W. P. Schanck, Avon, N. Y...............	....	First	20 00
Howard Cook, Beloit, O....................	....	Second ...	10 00
J. F. Converse & Co., Woodville, N. Y.	....	Third	Ribbon.
Produce of Cow—Two Animals, Either Sex Under 4 Years Old.			
J. F. Converse & Co., Woodville, N. Y..	....	First	10 00
Howard Cook, Beloit, O....................	....	Second ...	5 00
W. P. Schanck, Avon, N. Y...............	....	Third	Ribbon.

FAT CATTLE.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Fat Cattle—Steer or Spayed Heifer 2 Years Old and Under 3.			
Fletcher S. Hines, Malot Park, Ind..........	....	First	$15 00
Fat Cattle—Steer or Spayed Heifer, 1 Year Old and Under 2.			
Fletcher S. Hines, Malot Park, Ind..........	.. ..	First	15 00

REPORT OF THE OHIO STATE DAIRY TEST, 1903.

THE TESTS ARE CONDUCTED BY THE OHIO STATE BOARD OF AGRICULTURE AND THE AGRICULTURAL EXPERIMENT STATION. THE FOLLOWING TABLE GIVES THE NAME OF EACH COW ENTERED FOR THE TESTS, THE REGISTER NUMBER, DATE OF BIRTH, BIRTH OF FIRST CALF, POUNDS OF MILK PRODUCED, PER CENT. OF BUTTER FAT, PER CENT. OF SOLIDS NOT FAT AND THE POINTS SCORED.

Name of Cow.	Breed.	Registered Number.	Date of Birth.	Birth of Last Calf.	Date of Test.	Pounds Milk.	Per Cent. Fat.	Per Cent. of Solids not Fat.	Per Cent. Total Solids.	Pounds Fat.	Pounds Solids not Fat.	Points Scored.	Owner.
Margolyn 2nd	Holstein..	40,758	Oct. 18, '95	Oct. 18, '02	Nov. 2, '02	54.5	3.72	6.15	9.87	2.0289	3.3517	80.9772	W. B. Smith & Son, Columbus, Ohio.
Popular	Holstein..	41,009	Nov. 18, '95	Oct. 16, '02	Nov. 2, '02	57.7	2.72	8.15	10.87	1.5729	4.7025	75.4020	W. B. Smith & Son, Columbus, Ohio.
Verbelle May Clothilde	Holstein..	47,650	Mch. 15, '98	Sep. 30, '02	Nov. 2, '02	59.8	2.84	8.23	11.07	1.7025	4.9215	80.6040	W. B. Smith & Son, Columbus, Ohio.
Aaggie Maxima Clothilde	Holstein..	47,651	Jan. 25, '98	Oct. 14, '02	Nov. 2, '02	52.8	3.53	9.54	13.07	1.8660	5.0371	86.2026	W. B. Smith & Son, Columbus, Ohio.
Pana	Holstein..	33,957	Aug. 5, '92	Oct. 22, '02	Nov. 2, '02	61.0	2.56	8.52	11.08	1.5658	5.1972	78.1572	W. B. Smith & Son, Columbus, Ohio.
Adventuress	Holstein..	6,452	Feb. 24, '87	Sep. 26, '02	Nov. 2, '02	54.8	3.07	8.29	11.36	1.6840	4.5429	77.7774	W. B. Smith & Son, Columbus, Ohio.
Day Break	Holstein..	36,260	Mch. 28, '95	Oct. 30, '02	Nov. 2, '02	53.3	3.28	9.65	12.93	1.7488	5.1434	83.3244	W. B. Smith & Son, Columbus, Ohio.
Ruby Belle 2nd.........	Holstein..	42,278	Oct. 22, '96	Oct. 8, '02	Dec. 19, '02	46.5	3.48	8.01	11.49	1.6197	3.7246	70.9386	F. G. Johnston & Co., Columbus, Ohio.
Concordia Aaggie Netherland	Holstein..	41,397	Jan. 25, '96	Aug. 12, '02	Dec. 19, '02	43.6	3.48	8.37	11.85	1.5203	3.6493	67.5048	F. G. Johnston & Co., Columbus, Ohio.
Lady Edith Alpha.....	Holstein..	53,066	Oct. 28, '98	Nov. 24, '02	Dec. 19, '02	49.2	3.57	8.29	11.86	1.7592	4.0786	77.2476	F. G. Johnston & Co., Columbus, Ohio.

Gretta Thorne 3rd.....	Holstein..	33,315	Apr. 8, '93	Dec. 2, '02	Dec. 19, '02	48.7	3.83	9.04	12.87	1.8656	4.4024	82.3824	F. G. Johnston & Co., Columbus, Ohio.
Paula Kola	Holstein..	44,337	Feb. 24, '98	Dec. 14, '02	Dec. 19, '02	55.9	4.82	8.34	13.16	2.6979	4.6620	108.9090	F. G. Johnston & Co., Columbus, Ohio.
Margaret Hollander ..	Holstein..	33,311	Feb. 6, '93	Dec. 10, '02	Dec. 19, '02	41.6	4.56	9.15	13.71	1.8976	3.8064	79.7664	F. G. Johnston & Co., Columbus, Ohio.
Tillie Burr	Holstein..	42,816	Sep. 22, '96	Mch. 2, '03	Mch. 18, '03	41.4	4.25	8.73	12.98	1.7598	3.6142	74.4792	F. G. Johnston & Co., Columbus, Ohio.
Buckeye Grace DeKol.	Holstein..	55,886	Aug. 18, '00	Feb. 9, '03	Mch. 18, '03	38.9	3.77	8.06	11.83	1.4693	3.1353	62.8908	F. G. Johnston & Co., Columbus, Ohio.
Wilhelmina DeKol	Holstein..	43,939	Jan. 17, '98	Feb. 21, '03	Mch. 18, '03	54.7	3.39	8.32	11.71	1.8566	4.5510	83.0040	F. G. Johnston & Co., Columbus, Ohio.
Anna Clothilde 4th....	Holstein..	40,951	Feb. 29, '96	Jan. 26, '03	Mch. 18, '03	59.6	3.33	8.39	11.72	1.9894	5.0004	89.6844	F. G. Johnston & Co., Columbus, Ohio.
Orrice 5th's DeKol Clothilde	Holstein..	53,974	Dec. 14, '99	Feb. 9, '03	Mch. 18, '03	53.5	3.77	7.66	11.43	2.0176	4.0981	85.1166	F. G. Johnston & Co., Columbus, Ohio.
Orrice 5th's DeKol Clothilde	Holstein..	53,974	Dec. 14, '99	Feb. 9, '03	Mch. 19, '03	52.7	3.88	8.53	12.41	2.0473	4.4953	88.3908	F. G. Johnston & Co., Columbus, Ohio.
Anna DeKol Queen....	Holstein..	55,118	Mch. 13, '00	Mch. 28, '03	June 10, '03	37.9	3.27	9.12	12.39	1.2414	3.4564	57.9804	F. G. Johnston & Co., Columbus, Ohio.
Anna DeKol Queen....	Holstein..	55,118	Mch. 13, '00	Mch. 28, '03	June 11, '03	38.5	3.33	9.33	12.66	1.2853	3.5920	60.1110	F. G. Johnston & Co., Columbus, Ohio.

DAIRY TEST AWARDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.
Cow Producing Largest Yield of Fat From 24 Hours' Milk.		
F. G. Johnston & Co., Columbus, O.....	Paula Kola 44337........	Silver Cup.
F. G. Johnston & Co., Columbus, O.....	Orice 5th Dekol Clothilde 53974	Silver Medal.
Cow Producing Largest Yield of Solids, Not Including Fat.		
W. B. Smith & Son, Columbus, O........	Pana 33957	Silver Cup.
W. B. Smith & Son, Columbus, O........	Day Break 36260	Silver Medal.
Cow of Any Breed Making the Highest Score.		
F. G. Johnston & Co., Columbus, O.....	Paula Kola 44337........	Championship Cup.
Herd of Five Cows Tested at One Time Making the Highest Score.		
W. B. Smith & Son, Columbus, O........	....	Grand Sweepstakes Plate.

THIRD DEPARTMENT—SHEEP.

B. P. **Baldwin**, Member in Charge.

MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
R. D. Williamson, Xenia, O.		First	$10 00
S. Blamer & Son, Johnstown, O.		Second	5 00
F. W. Perkins, West Mansfield, O.		Third	3 00
Ram 1 Year Old and Under 2.			
G. E. Helser, Herring, O.		First	10 00
R. D. Williamson, Xenia, O.		Second	5 00
G. E. Helser, Herring, O.		Third	3 00
Ram Under 1 Year Old.			
R. D. Williamson, Xenia, O.		First	8 00
R. D. Williamson, Xenia, O.		Second	4 00
G. E. Helser, Herring, O.		Third	2 00
Ewe 2 Years Old or Over.			
F. W. Perkins, West Mansfield, O.		First	10 00
S. Blamer & Son, Johnstown, O.		Second	5 00
M. M. Gardner, Bennington, O.		Third	3 00
Ewe 1 Year Old and Under 2.			
G. E. Helser, Herring, O.		First	10 00
R. D. Williamson, Xenia, O.		Second	5 00
F. W Perkins, West Mansfield, O.		Third	3 00
Ewe Under 1 Year Old.			
R. D. Williamson, Xenia, O.		First	8 00
G. E. Helser, Herring, O.		Second	4 00
F. W. Perkins, West Mansfield, O.		Third	2 00
Flock—Ram and Ewes.			
R. D. Williamson, Xenia, O.		First	10 00
G. E. Helser, Herring, O.		Second	5 00
Get of Sire—Best Pen of Four Lambs.			
R. D. Williamson, Xenia, O.		First	10 00
R. D. Williamson, Xenia, O.		Second	5 00

DELAINE MERINOS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
S. Blamer & Son, Johnstown, O.		First	$10 00
S. Blamer & Son, Johnstown, O.		Second	5 00
G. E. Helser, Herring, O.		Third	3 00
Ram 1 Year Old and Under 2.			
G. E. Helser, Herring, O.		First	10 00
Wilson Bros., Fredericktown, O.		Second	5 00
Wilson Bros., Fredericktown, O.		Third	3 00

DELAINE MERINOS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram Under 1 Year Old.			
Wilson Bros., Fredericktown, O.		First	$8 00
S. Blamer & Son, Johnstown, O.		Second	4 00
G. E. Helser, Herring, O.		Third	2 00
Ewe 2 Years Old or Over.			
Wilson Bros., Fredericktown, O.		First	10 00
G. E. Helser, Herring, O.		Second	5 00
S. Blamer & Son, Johnstown, O.		Third	3 00
Ewe 1 Year Old and Under 2.			
G. E. Helser, Herring, O.		First	10 00
S. Blamer & Son, Johnstown, O.		Second	5 00
Wilson Bros., Frederickstown, O.		Third	3 00
Ewe Under 1 Year Old.			
Wilson Bros., Frederickstown, O.		First	8 00
R. D. Williamson, Xenia, O.		Second	4 00
G. E. Helser, Herring, O.		Third	2 00
Flock—Ram and Ewes.			
G. E. Helser, Herring, O.		First	10 00
Wilson Bros., Fredericktown, O.		Second	5 00
Get of Sire—Best Pen of Four Lambs.			
Wilson Bros., Fredericktown, O.		First	10 00
G. E. Helser, Herring, O.		Second	5 00

FRENCH MERINOS—RAMBOUILLET.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
Max Chapman, Marysville, O.	Imperial, 77418	First	$10 00
Shaw & Bader, Marits, O.		Second	5 00
Geo. Truesdell, Deer Park, Md.		Third	3 00
Ram 1 Year Old and Under 2.			
Max Chapman, Marysville, O.	Victor, 23,880	First	10 00
Shaw & Bader, Marits, O.	Bub	Second	5 00
Max Chapman, Marysville, O.	Superb, 23,883	Third	3 00
Ram Under 1 Year Old.			
Geo. Truesdell, Deer Park, Md.		First	5 00
Geo. Truesdell, Deer Park, Md.		Second	3 00
Shaw & Bader, Marits, O.	Ono	Third	2 00
Ewe 2 Years Old or Over.			
Geo. Truesdell, Deer Park, Md.	22,063	First	10 00
Shaw & Bader, Marits, O.	Model	Second	5 00
Max Chapman, Marysville, O.	13,700	Third	3 00
Ewe 1 Year Old and Under 2.			
Max Chapman, Marysville, O.	Rieta, 23,886	First	10 00
Shaw & Bader, Marits, O.	Ruberta	Second	5 00
Shaw & Bader, Marits, O.	Belle	Third	3 00
Ewe Under 1 Year Old.			
Max Chapman, Marysville, O.		First	5 00
Geo. Truesdell, Deer Park, Md.		Second	3 00
Geo. Truesdell, Deer Park, Md.		Third	2 00

FRENCH MERINOS, RAMBOUILLETT—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Flock—Ram and Ewes.			
Max Chapman, Marysville, O.............	....	First	$10 00
Geo. Truesdell, Deer Park, Md...........	....	Second	5 00
Get of Sire—Pen of Four Lambs.			
Geo. Truesdell, Deer Park, Md..........	....	First	10 00
Max Chapman, Marysville, O............	....	Second	5 00

COTSWOLDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
Wilson Bros., Muncie, Ind................	....	First	$10 00
Wilson Bros., Muncie, Ind................	....	Second	5 00
C. Schwert & Sons, Crestline, O..........	....	Third	3 00
Ram 1 Year Old and Under 2.			
Wilson Bros., Muncie, Ind................	....	First	10 00
D. B. Watt & Son, Xenia, O.............	....	Second	5 00
Wilson Bros., Muncie, Ind................	....	Third	3 00
Ram Under 1 Year Old.			
Wilson Bros., Muncie, Ind................	....	First	5 00
D. B. Watt & Son, Xenia, O............	....	Second	3 00
Wilson Bros., Muncie, Ind................	....	Third	2 00
Ewe 2 Years Old or Over.			
Wilson Bros., Muncie, Ind...............	....	First	10 00
D. B. Watt & Son, Xenia, O.............	....	Second	5 00
C. Schwert & Sons, Crestline, O..........	....	Third	3 00
Ewe 1 Year Old and Under 2.			
Wilson Bros., Muncie, Ind.................	....	First	10 00
Wilson Bros., Muncie, Ind.................	....	Second	5 00
D. B. Watt & Son, Xenia, O..............	....	Third	3 00
Ewe Under 1 Year Old.			
Wilson Bros., Muncie, Ind.................	....	First	5 00
Wilson Bros., Muncie, Ind.................	....	Second	3 00
C. Schwert & Sons, Crestline, O...........	....	Third	2 00
Flock—Ram and Ewes.			
Wilson Bros., Muncie, Ind................	....	First	10 00
D. B. Watt & Son, Xenia, O................	....	Second	5 00
Get of Sire—Pen of Four Lambs.			
Wilson Bros., Muncie, Ind..................	....	First	10 00
D. B. Watt & Son, Xenia O................	....	Second	5 00

OXFORD DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount
Ram 2 Years Old or Over.			
J. C. Williamson, Xenia, O.		First	$10 00
Geo. W. Heskett, Jr., Fulton, O.		Second	5 00
Wilson Bros., Muncie, Ind.		Third	3 00
Ram 1 Year Old and Under 2.			
Geo. W. Heskett, Jr., Fulton, O.		First	10 00
Geo. W. Heskett, Jr., Fulton, O.		Second	5 00
J. C. Williamson, Xenia, O.		Third	3 00
Ram Under 1 Year Old.			
Wilson Bros., Muncie, Ind.		First	5 00
Geo. W. Heskett, Jr., Fulton, O.		Second	3 00
Geo. W. Heskett, Jr., Fulton, O.		Third	2 00
Ewe 2 Years Old or Over.			
Wilson Bros., Muncie, Ind.		First	10 00
J. C. Williamson, Xenia, O.		Second	5 00
Geo. W. Heskett, Jr., Fulton, O.		Third	3 00
Ewe 1 Year Old and Under 2.			
Wilson Bros., Muncie, Ind.		First	10 00
J. C. Williamson, Xenia, O.		Second	5 00
Geo. W. Heskett, Jr., Fulton, O.		Third	3 00
Ewe Under 1 Year Old.			
Geo. W. Heskett, Jr., Fulton, O.		First	5 00
Geo. W. Heskett, Jr., Fulton, O.		Second	3 00
Wilson Bros., Muncie, Ind.		Third	2 00
Flock—Ram and Ewes.			
Wilson Bros., Muncie, Ind.		First	10 00
Geo. W. Heskett, Jr., Fulton, O.		Second	5 00
Get of Sire—Pen of Four Lambs.			
Geo. W. Heskett, Jr., Fulton, O.		First	10 00
J. C. Williamson, Xenia, O.		Second	5 00

SHROPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
J. S. McDowell, Troy, O.	Buttars, 177,201	First	$10 00
Folly Farm, Abington, Pa.		Second	5 00
Folly Farm, Abington, Pa.		Third	3 00
Ram 1 Year Old and Under 2.			
Folly Farm, Abington, Pa.		First	10 00
J. S. McDowell, Troy, O.	Davisons, 180,405	Second	5 00
Folly Farm, Abington, Pa.		Third	3 00
Ram Under 1 Year Old.			
J. C. Price, Georgesville, O.		First	5 00
C. H. Hutchison, White Pigeon, Mich.		Second	3 00
Folly Farm, Abington, Pa.		Third	2 00
Ewe 2 Years Old or Over.			
Folly Farm, Abington, Pa.		First	10 00
J. S. McDowell, Troy, O.	Lady Cardiff, 161,078	Second	5 00
C. H. Hutchison, White Pigeon, Mich.		Third	3 00

SHROPSHIRE DOWNS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ewe 1 Year Old and Under 2.			
Folly Farm, Abington, Pa.		First	$10 00
Folly Farm, Abington, Pa.		Second	5 00
C. H. Hutchison, White Pigeon, Mich.		Third	3 00
Ewe Under 1 Year Old.			
C. H. Hutchison, White Pigeon, Mich.		First	5 00
Folly Farm, Abington, Pa.		Second	3 00
J. C. Price, Georgesville, O.		Third	2 00
Flock—Ram and Ewes.			
Folly Farm, Abington, Pa.		First	10 00
J. S. McDowell, Troy, O.		Second	5 00
Get of Sire—Pen of Four Lambs.			
C. H. Hutchison, White Pigeon, Mich.		First	10 00
Folly Farm, Abington, Pa.		Second	5 00

HAMPSHIRE DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
P. W. Artz, New Carlisle, O.		First	$10 00
P. W. Artz, New Carlisle, O.		Second	5 00
W. J. Cherry, Xenia, O.		Third	3 00
Ram 1 Year Old and Under 2.			
P. W. Artz, New Carlisle, O.		First	10 00
W. J. Cherry, Xenia, O.		Second	5 00
P. W. Artz, New Carlisle, O.		Third	3 00
Ram Under 1 Year Old.			
P. W. Artz, New Carlisle, O.		First	5 00
P. W. Artz, New Carlisle, O.		Second	3 00
W. J. Cherry, Xenia, O.		Third	2 00
Ewe 2 Years Old or Over.			
W. J. Cherry, Xenia, O.		First	10 00
P. W. Artz, New Carlisle, O.		Second	5 00
P. W. Artz, New Carlisle, O.		Third	3 00
Ewe 1 Year Old and Under 2.			
P. W. Artz, New Carlisle, O.		First	10 00
P. W. Artz, New Carlisle, O.		Second	5 00
W. J. Cherry, Xenia, O.		Third	3 00
Ewe Under 1 Year Old.			
P. W. Artz, New Carlisle, O.		First	5 00
W. J. Cherry, Xenia, O.		Second	3 00
P. W. Artz, New Carlisle, O.		Third	2 00
Flock—Ram and Ewes.			
P. W. Artz, New Carlisle, O.		First	10 00
W. J. Cherry, Xenia, O.		Second	5 00
Get of Sire—Pen of Four Lambs.			
P. W. Artz, New Carlisle, O.		First	10 00
W. J. Cherry, Xenia, O.		Second	5 00

SOUTH DOWNS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
Wilson Bros., Muncie, Ind.		First	$10 00
W. H. Compton & Son, Monroe, O.		Second	5 00
W. H. Compton & Son, Monroe, O.		Third	3 00
Ram 1 Year Old and Under 2.			
W. H. Compton & Son, Monroe, O.		First	10 00
Wilson Bros., Muncie, Ind.		Second	5 00
W. H. Compton & Son, Monroe, O.		Third	3 00
Ram Under 1 Year Old.			
R. C. Watt, Cedarville, O.		First	5 00
Wilson Bros., Muncie, Ind.		Second	3 00
R. C. Watt, Cedarville, O.		Third	2 00
Ewe 2 Years Old or Over.			
Wilson Bros., Muncie, Ind.		First	10 00
W. H. Compton & Son, Monroe, O.		Second	5 00
W. H. Compton & Son, Monroe, O.		Third	3 00
Ewe 1 Year Old and Under 2.			
Wilson Bros., Muncie, Ind.		First	10 00
Isaac Nichols, Fulton, O.		Second	5 00
W. H. Compton & Son, Monroe, O.		Third	3 00
Ewe Under 1 Year Old.			
R. C. Watt, Cedarville, O.		First	5 00
R. C. Watt, Cedarville, O.		Second	3 00
Isaac Nichols, Fulton, O.		Third	2 00
Flock—Ram and Ewes.			
Wilson Bros., Muncie, Ind.		First	10 00
W. H. Compton & Son, Monroe, O.		Second	5 00
Get of Sire—Pen of Four Lambs.			
R. C. Watt, Cedarville, O.		First	10 00
W. H. Compton & Son, Monroe, O.		Second	5 00

LINCOLNS AND LEICESTERS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
J. R. Bickett, Xenia, O.	10,007	First	$10 00
W. A. Lile & Sons, West Liberty, O.		Second	5 00
P. Clark & Son, Cable, O.		Third	3 00
Ram 1 Year Old and Under 2.			
W. A. Lile & Sons, West Liberty, O.		First	10 00
J. R. Bickett, Xenia, O.		Second	5 00
P. Clark & Son, Cable, O.		Third	3 00
Ram Under 1 Year Old.			
P. Clark & Son, Cable, O.		First	5 00
W. A. Lile & Sons, West Liberty, O.		Second	3 00
P. Clark & Son, Cable, O.		Third	2 00
Ewe 2 Years Old or Over.			
W. A. Lile & Sons, West Liberty, O.		First	10 00
P. Clark & Son, Cable, O.		Second	5 00
W. A. Lile & Sons, West Liberty, O.		Third	3 00

LINCOLNS AND LEICESTERS—Concluded.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ewe 1 Year Old and Under 2.			
P. Clark & Son, Cable, O.		First	$10 00
J. R. Bickett, Xenia, O.		Second	5 00
W. A. Lile & Sons, West Liberty, O.		Third	3 00
Ewe Under 1 Year Old.			
P. Clark & Son, Cable, O.		First	5 00
W. A. Lile & Sons, West Liberty, O.		Second	3 00
W. A. Lile & Sons, West Liberty, O.		Third	2 00
Flock—Ram and Ewes.			
P. Clark & Son, Cable, O.		First	10 00
W. A. Lile & Sons, West Liberty, O.		Second	5 00
Get of Sire—Ram and Ewes.			
W. A. Lile & Sons, West Liberty, O.		First	10 00
J. R. Bickett, Xenia, O.		Second	5 00

CHEVIOT.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Ram 2 Years Old or Over.			
E. S. Foust, Xenia, O.		First	$10 00
Ram 1 Year Old and Under 2.			
C. S. Plum, Columbus, O.		First	10 00
E. S. Foust, Xenia, O.		Second	5 00
E. S. Foust, Xenia, O.		Third	3 00
Ram Under 1 Year Old.			
E. S. Foust, Xenia, O.		First	5 00
E. S. Foust, Xenia, O.		Second	3 00
C. S. Plum, Columbus, O.		Third	2 00
Ewe 2 Years Old or Over.			
E. S. Foust, Xenia, O.		First	10 00
F. L. Postle, Camp Chase, O.		Second	5 00
E. S. Foust, Xenia, O.		Third	3 00
Ewe 1 Year Old and Under 2.			
E. S. Foust, Xenia, O.		First	10 00
E. S. Foust, Xenia, O.		Second	5 00
Ewe Under 1 Year Old.			
E. S. Foust, Xenia, O.		First	5 00
F. L. Postle, Camp Chase, O.		Second	3 00
E. S. Foust, Xenia, O.		Third	2 00
Flock—Ram and Ewes.			
E. S. Foust, Xenia, O.		First	10 00
Get of Sire—Pen of Four Lambs.			
E. S. Foust, Xenia, O.		First	10 00

DORSET.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount
Ram 2 Years Old or Over.			
J. E. Wing, Mechanicsburg, O.	2,517	First	$10 00
J. B. Henderson, Burgettstown, Pa.		Second	5 00
Ram 1 Year Old and Under 2.			
J. B. Henderson, Burgettstown, Pa.		First	10 00
J. E. Wing, Mechanicsburg, O.	2,519	Second	5 00
J. B. Henderson, Burgettstown, Pa.		Third	3 00
Ram Under 1 Year Old.			
J. B. Henderson, Burgettstown, Pa.		First	5 00
J. E. Wing, Mechanicsburg, O.	2,990	Second	3 00
J. E. Wing, Mechanicsburg, O.	2,989	Third	2 00
Ewe 2 Years Old or Over.			
J. E. Wing, Mechanicsburg, O.	Peele, 1,195	First	10 00
J. B. Henderson, Burgettstown, Pa.		Second	5 00
J. B. Henderson, Burgettstown, Pa.		Third	3 00
Ewe 1 Year Old and Under 2.			
J. E. Wing, Mechanicsburg, O.	Woodland, 2,543	First	10 00
J. B. Henderson, Burgettstown, Pa.		Second	5 00
J. B. Henderson, Burgettstown, Pa.		Third	3 00
Ewe Under 1 Year Old.			
J. E. Wing, Mechanicsburg, O.	Woodland, 2,985	First	5 00
J. B. Henderson, Burgettstown, Pa.		Second	3 00
J. B. Henderson, Burgettstown, Pa.		Third	2 00
Flock—Ram and Ewes.			
J. E. Wing, Mechanicsburg, O.		First	10 00
J. B. Henderson, Burgettstown, Pa.		Second	5 00
Get of Sire—Pen of Four Lambs.			
J. E. Wing, Mechanicsburg, O.		First	10 00
J. B. Henderson, Burgettstown, Pa.		Second	5 00

FAT SHEEP.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount
Wether 1 Year Old and Under 2.			
J. B. Henderson, Burgettstown, Pa.		First	$8 00
J. C. Price, Georgesville, O.		Second	5 00
J. B. Henderson, Burgettstown, Pa.		Third	3 00
Wether Lamb.			
J. C. Price, Georgesville, O.		First	6 00
J. C. Price, Georgesville, O.		Second	4 00
J. C. Price, Georgesville, O.		Third	2 00
Pen of Three Wethers, Any Age.			
J. B. Henderson, Burgettstown, Pa.		First	10 00
J. C. Price, Georgesville, O.		Second	5 00
Pen of Five Wether Lambs.			
J. C. Price, Georgesville, O.		First	10 00

FOURTH DEPARTMENT—SWINE.

A. P. Sandles, Member in Charge.

BERKSHIRES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
J. M. Hodson, Montpelier, O.	Black Premier	First	$12 00
W. J. Tharp, Pataskala, O.		Second	6 00
Etzler & Moses, Convoy, O.		Third	3 00
Boar 1 Year Old and Under 2.			
J. M. Hodson, Montpelier, O.	Artful Lee	First	10 00
W. P. Wentz, Delaware, O.	Perfection Boy	Second	5 00
Jas. Riley & Son, Thornton, Ind.	Baron Premier	Third	2 00
Boar 6 Months Old and Under 1 Year.			
Jas. Riley & Son, Thornton, Ind.	Riley's Premier	First	8 00
J. M. Hodson, Montpelier, O.	Mounts Head	Second	4 00
Samuel Wilkin, Russell, O.	Beauty's Chief	Third	2 00
Boar Under 6 Months Old.			
W. J. Tharp, Pataskala, O.		First	6 00
Jas. Riley & Son, Thornton, Ind.		Second	3 00
Samuel Wilkin, Russell, O.		Third	2 00
Sow 2 Years Old or Over.			
L. C. Peterson, Spring Valley, O.		First	12 00
J. M. Hodson, Montpelier, O.	Columbus Maid	Second	6 00
W. J. Tharp, Pataskala, O.		Third	3 00
Sow 1 Year Old and Under 2.			
Etzler & Moses, Convoy, O.		First	10 00
W. J. Tharp, Pataskala, O.		Second	5 00
L. C. Peterson, Spring Valley, O.		Third	2 00
Sow 6 Months Old and Under 1 Year.			
Jas. Riley & Son, Thornton, Ind.		First	8 00
Jas. Riley & Son, Thornton, Ind.		Second	4 00
W. J. Tharp, Pataskala, O.		Third	2 00
Sow Under 6 Months Old.			
W. J. Tharp, Pataskala, O.		First	6 00
J. L. Axline, Pataskala, O.		Second	3 00
J. M. Hodson, Montpelier, O.		Third	2 00
(Breeders' Rings.)			
Four Swine, Get of One Boar.			
Etzler & Moses, Convoy, O.		First	15 00
Jas. Riley & Son, Thornton, Ind.		Second	8 00
Four Pigs Under 6 Months Old.			
W. J. Tharp, Pataskala, O.		First	15 00
J. L. Axline, Pataskala, O.		Second	8 00
Boar and Three Sows Over 1 Year Old.			
Etzler & Moses, Convoy, O.		First	15 00
W. J. Tharp, Pataskala, O.		Second	8 00
Boar and Three Sows Under 1 Year Old.			
Jas. Riley & Son, Thornton, Ind.		First	15 00
J. L. Axline, Pataskala, O.		Second	8 00

POLAND CHINAS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
S. E. Shellenberger & Co., Camden, O.	High Roller, 54,861.	First	$12 00
M. B. Graham, Remington, Ind.	Sure Perfection	Second	6 00
Foster & Gabriel, New Carlisle, O.	Perfection	Third	3 00
Boar 1 Year Old and Under 2.			
W. C. Welch, Harveysburg, O.	Beauty's Perfection	First	10 00
C. W. Haines, Centerville, O.		Second	5 00
S. E. Shellenberger & Co, Camden, O.	Royal Blue	Third	2 00
Boar 6 Months Old and Under 1 Year.			
F. Kolb & Son, Ontario, O.		First	8 00
S. E. Shellenberger & Co., Camden, O.	Charmer Chief	Second	4 00
F. Kolb & Son, Ontario, O.	King Perfection	Third	2 00
Boar Under 6 Months Old.			
T. Hunter & Co., Morrow, O.		First	6 00
F. Kolb & Son, Ontario, O.		Second	3 00
C. W. Haines, Centerville, O.		Third	2 00
Sow 2 Years Old or Over.			
J. M. Linson, South Solon, O.		First	12 00
Rhinehart & Scott, Richmond, O.	Moorish Beauty	Second	6 00
H. Wisely & Son, Grover Hill, O.	Lady Jamison II.	Third	3 00
Sow 1 Year Old and Under 2.			
W. C. Hankinson, Middletown, O.	Hankinson's Ideal	First	10 00
Rhinehart & Scott, Richmond, O.	Superior Lady	Second	5 00
Lock & Wellington, Remington, O.		Third	2 00
Sow 6 Months Old and Under 1 Year.			
Max Blue, Lancaster, O.		First	8 00
J. M. Linson, South Solon, O.		Second	4 00
F. Kolb & Son, Ontario, O.	Perfection Girl	Third	2 00
Sow Under 6 Months Old.			
T. Hunter & Co., Morrow, O.		First	6 00
C. W. Haines, Centerville, O.		Second	3 00
T. Hunter & Co., Morrow, O.		Third	2 00
(Breeders' Rings.)			
Four Swine, Get of One Boar.			
T. C. Robinson, Piqua, O.		First	15 00
F. Kolb & Son, Ontario, O.		Second	8 00
Four Pigs, Under 6 Months Old.			
F. Kolb & Son, Ontario, O.		First	15 00
J. H. Jenkins, Mt. Vernon, O.		Second	8 00
Boar and Three Sows Over 1 Year Old.			
T. C. Robinson, Piqua, O.		First	15 00
H. Wisely & Sons, Grover Hill, O.		Second	8 00
Boar and Three Sows Under 1 Year.			
J. M. Linson, South Solon, O.		First	15 00
T. C. Robinson, Piqua, O.		Second	8 00

NOTE—Special offers were made by the Ohio Poland China Record Co.

CHESTER WHITES.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
W. T. Deaver, Lucasville, O.		First	$12 00
W. J. Cherry, Xenia, O.		Second	6 00
W. T. Deaver, Lucasville, O.		Third	3 00
Boar 1 Year Old and Under 2.			
F. P. & J. J. Hardin, Lima, O.		First	10 00
S. J. Parr, Newark, O.	Superior	Second	5 00
W. H. Pool, Delaware, O.		Third	2 00
Boar 6 Months Old and Under 1 Year.			
F. P. & J. J. Hardin, Lima, O.	Cock Robin,	First	8 00
W. J. Cherry, Xenia, O.		Second	4 00
F. P. & J. J. Hardin, Lima, O.	Cap Sheaf	Third	2 00
Boar Under 6 Months Old.			
F. P. & J. J. Hardin, Lima, O.		First	6 00
C. Hintz & Son, Fremont, O.	Chief II.	Second	3 00
Isaiah Huber, DeGraff, O.	Denmark	Third	2 00
Sow 2 Years Old or Over.			
F. P. & J. J. Hardin, Lima, O.	Superba	First	12 00
F. P. & J. J. Hardin, Lima, O.	Money	Second	6 00
W. T. Deaver, Lucasville, O.		Third	3 00
Sow 1 Year Old and Under 2.			
F. P. & J. J. Hardin, Lima, O.	Sweetness	First	10 00
F. P. & J. J. Hardin, Lima, O.	Rose Bud	Second	5 00
W. J. Cherry, Xenia, O.		Third	2 00
Sow 6 Months Old and Under 1 Year.			
F. P. & J. J. Hardin, Lima, O.	Early Bird	First	8 00
F. P. & J. J. Hardin, Lima, O.	Ruberta	Second	4 00
C. Hintz & Son, Fremont, O.	Bess XI.	Third	2 00
Sow Under 6 Months Old.			
F. P. & J. J. Hardin, Lima, O.		First	6 00
C. Hintz & Son, Fremont, O.	Bess XIII.	Second	3 00
W. J. Cherry, Xenia, O.		Third	2 00
(Breeders' Rings.)			
Four Swine, Get of One Boar.			
F. P. & J. J. Hardin, Lima, O.		First	$15 00
F. P. & J. J. Hardin, Lima, O.		Second	8 00
Four Pigs Under 6 Months Old.			
F. P. & J. J. Hardin, Lima, O.		First	15 00
C. Hintz & Son, Fremont, O.		Second	8 00
Boar and Three Sows Over 1 Year Old.			
F. P. & J. J. Hardin, Lima, O.		First	15 00
W. H. Pool, Delaware, O.		Second	8 00
Boar and Three Sows Under 1 Year Old.			
F. P. & J. J. Hardin, Lima, O.		First	15 00
C. Hintz & Son, Fremont, O.		Second	8 00

NOTE—A special offer for three pigs under 1 year old was made by the American Chester White Record Association.

DUROC JERSEYS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
Watt & Foust, Cedarville, O.		First	$12 00
W. P. Whittier, Galena, O.	Durock	Second	6 00
J. B. Hilligoss, Anderson, Ind.		Third	3 00
Boar 1 Year Old and Under 2.			
Watt & Foust, Cedarville, O.		First	10 00
Mahan Bros., Osborn, O.		Second	5 00
J. B. Hilligoss, Anderson, Ind.		Third	2 00
Boar 6 Months Old and Under 1 Year.			
Watt & Foust, Cedarville, O.		First	8 00
Mahan Bros., Osborn, O.		Second	4 00
Watt & Foust, Cedarville, O.		Third	2 00
Boar Under 6 Months Old.			
Watt & Foust, Cedarville, O.		First	6 00
Watt & Foust, Cedarville, O.		Second	3 00
Mahan Bros., Osborn, O.		Third	2 00
Sow 2 Years Old or Over.			
Mahan Bros., Osborn, O.		First	12 00
Watt & Foust, Cedarville, O.		Second	6 00
J. B. Hilligoss, Anderson, Ind.		Third	3 00
Sow 1 Year Old and Under 2.			
Mahan Bros., Osborn, O.		First	10 00
Mahan Bros., Osborn, O.		Second	5 00
Watt & Foust, Cedarville, O.		Third	2 00
Sow 6 Months Old and Under 1 Year.			
Mahan Bros., Osborn, O.		First	8 00
Watt & Foust, Cedarville, O.		Second	4 00
Watt & Foust, Cedarville, O.		Third	2 00
Sow Under 6 Months Old.			
Watt & Foust, Cedarville, O.		First	6 00
Watt & Foust, Cedarville, O.		Second	3 00
Watt & Foust, Cedarville, O.		Third	2 00
(Breeders' Rings.)			
Four Swine, Get of One Boar.			
Watt & Foust, Cedarville, O.		First	15 00
Mahan Bros., Osborn, O.		Second	8 00
Four Pigs Under 6 Months Old.			
Watt & Foust, Cedarville, O.		First	15 00
Mahan Bros., Osborn, O.		Second	8 00
Boar and Three Sows Over 1 Year Old.			
Watt & Foust, Cedarville, O.		First	15 00
Boar and Three Sows Under 1 Year Old.			
Watt & Foust, Cedarville, O.		First	15 00
Mahan Bros., Osborn, O.		Second	8 00

LARGE YORKSHIRES AND TAMROCKS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
F. L. Postle, Camp Chase, O.		First	$10 00
C. W. Hintz, Fremont, O.	Oak Tody	Second	5 00
Boar 1 Year Old and Under 2.			
F. L. Postle, Camp Chase, O.		First	10 00
C. W. Hintz, Fremont, O.	Belma Farger	Second	5 00
Boar 6 Months Old and Under 1 Year.			
W. E. Rockhill, Etna Green, Ind.	S. H. Champion.	First	8 00
C. W. Hintz, Fremont, O.	Belma Farger II.	Second	4 00
Boar Under 6 Months Old.			
W. E. Rockhill, Etna Green, Ind.	N. S. Metchley XVIII.	First	5 00
W. E. Rockhill, Etna Green, Ind.	N. S. Metchley XIX	Second	3 00
Sow 2 Years Old or Over.			
W. E. Rockhill, Etna Green, Ind.	O. L. Cinderella.	First	10 00
C. W. Hintz, Fremont, O.	Summer Hill Empress	Second	5 00
Sow 1 Year Old and Under 2.			
W. E. Rockhill, Etna Green, Ind.	Nottingham Lady Sarah	First	10 00
W. E. Rockhill, Etna Green, Ind.	O. L. Rose	Second	5 00
Sow 6 Months Old and Under 1 Year.			
W. E. Rockhill, Etna Green, Ind.	Minnie	First	8 00
C. W. Hintz, Fremont, O.	Woodstock Buttercup	Second	4 00
Sow Under 6 Months Old.			
W. E. Rockhill, Etna Green, Ind.	Spot I.	First	5 00
W. E. Rockhill, Etna Green, Ind.	Spot II.	Second	3 00
(Breeders' Rings.)			
Four Swine, Get of One Boar.			
W. E. Rockhill, Etna Green, Ind.		First	12 00
F. L. Postle, Camp Chase, O.		Second	6 00
Four Pigs Under 6 Months Old.			
W. E. Rockhill, Etna Green, Ind.		First	12 00
F. L. Postle, Camp Chase, O.		Second	6 00
Boar and Three Sows Over 1 Year Old.			
F. L. Postle, Camp Chase, O.		First	12 00
Boar and Three Sows Under 1 Year Old.			
W. E. Rockhill, Etna Green, Ind.		First	12 00
F. L. Postle, Camp Chase, O.		Second	6 00

SUFFOLK, SMALL YORKSHIRE AND ESSEX BREEDS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
Davis Bros., Dyer, Ind.....................	....	First	$10 00
Geo. Inechen, Bryant, Ind.................	....	Second	5 00
Boar 1 Year old and Under 2.			
J. L. McMurray, Montgomery, Mich......	Searchlight........	First	10 00
Geo. Inechen, Bryant, Ind.................	....	Second	5 00
Boar 6 Months Old and Under 1 Year.			
J. L. McMurray, Montgomery, Mich.......	Eldorado	First	8 00
Geo. Inechen, Bryant, Ind..................	....	Second	4 00
Boar Under 6 Months Old.			
J. L. McMurray, Montgomery, Mich......	Searchlight II....	First	5 00
Geo. Inechen, Bryant, Ind.................	....	Second	3 00
Sow 2 Years Old or Over.			
Davis Bros., Dyer, Ind.....................	....	First	10 00
J. L. McMurray, Montgomery, Mich.....	Eva H...........	Second	5 00
Sow 1 Year Old and Under 2.			
Davis Bros., Dyer, Ind.....................	....	First	10 00
Geo. Inechen, Bryant, Ind.................	....	Second	5 00
Sow 6 Months Old and Under 1 Year.			
J. L. McMurray, Montgomery, Mich......	Thelma	First	8 00
Geo. Inechen, Bryant, Ind.................	....	Second	4 00
Sow Under 6 Months Old.			
J. L. McMurray, Montgomery, Mich......	....	First	5 00
J. L. McMurray, Montgomery, Mich......	....	Second	3 00
(Breeders' Rings.)			
Four Swine, Get of One Boar.			
J. L. McMurray, Montgomery, Mich.....	....	First	12 00
J. L. McMurray, Montgomery, Mich.....	....	Second	6 00
Four Pigs Under 6 Months Old.			
J. L. McMurray, Montgomery, Mich.....	....	First	12 00
Geo. Inechen, Bryant, Ind.................	....	Second	6 00
Boar and Three Sows Over 1 Year Old.			
Davis Bros., Dyer, Ind.....................	....	First	12 00
J. L. McMurray, Montgomery, Mich.....	....	Second	6 00
Boar and Three Sows Under 1 Year Old.			
J. L. McMurray, Montgomery, Mich.....	....	First	12 00
J. L. McMurray, Montgomery, Mich.....	....	Second	6 00

CHESHIRES AND VICTORIAS.

Owner's Name and Postoffice.	Name of Animal.	Premium.	Amount.
Boar 2 Years Old or Over.			
Davis Bros., Dyer, Ind.		First	$10 00
Davis Bros., Dyer, Ind.		Second	5 00
Boar 1 Year Old and Under 2.			
Davis Bros., Dyer, Ind.		First	10 00
Geo. Inechen, Bryant, Ind.		Second	5 00
Boar 6 Months Old and Under 1 Year.			
Geo. Inechen, Bryant, Ind.		First	8 00
Etzler & Moses, Convoy, O.		Second	4 00
Boar Under 6 Months Old.			
Geo. Inechen, Bryant, Ind.		First	5 00
Geo. Inechen, Bryant, Ind.		Second	3 00
Sow 2 Years Old or Over.			
Geo. Inechen, Bryant, Ind.		First	10 00
Geo. Inechen, Bryant, Ind.		Second	5 00
Sow 1 Year Old and Under 2.			
Geo. Inechen, Bryant, Ind.		First	10 00
Davis Bros., Dyer, Ind.		Second	5 00
Sow 6 Months Old and Under 1 Year.			
R. D. Button, Canastata, Ind.		First	8 00
Etzler & Moses, Convoy, O.		Second	4 00
Sow Under 6 Months Old.			
Geo. Inechen, Bryant, Ind.		First	5 00
Geo. Inechen, Bryant, Ind.		Second	3 00
(Breeders' Rings.)			
Four Pigs Under 6 Months Old.			
Geo. Inechen, Bryant, Ind.		First	12 00
Davis Bros., Dyer, Ind.		Second	6 00
Boar and Three Sons Over 1 Year.			
Geo. Inechen, Bryant, Ind.		First	12 00
Davis Bros., Dyer, Ind.		Second	6 00
Boar and Three Sons Under 1 Year.			
Geo. Inechen, Bryant, Ind.		First	12 00
Davis Bros., Dyer, Ind.		Second	6 00

FIFTH DEPARTMENT—POULTRY.

A. P. SANDLES, Member in Charge.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Barred Plymouth Rocks.		
Chas McClave, New London, O.	Best Cock	$1 25
Eugene Sites, Elyria, O.	2d “	75
Eugene Sites, Elyria, O.	3d “	25
Eugene Sites, Elyria, O.	Best Cockerel	1 25
Eugene Sites, Elyria, O.	2d “	75
Oliver Planck, Camp Chase, O.	3d “	25
Chas. McClave, New London, O.	Best Hen	1 25
Chas. McClave, New London, O.	2d “	75
Eugene Sites, Elyria, O.	3d “	25
Chas. McClave, New London, O.	Best Pullet	1 25
Eugene Sites, Elyria, O.	2d “	75
Eugene Sites, Elyria, O.	3d “	25
Chas. McClave, New London, O.	Best Breeding Pen	2 00
Eugene Sites, Elyria, O.	2d “ “	1 00
White Plymouth Rocks.		
W. T. Elliott, Bloomingburg, O.	Best Cock	1 25
W. T. Elliott, Bloomingburg, O.	2d “	75
James A. Tucker, Concord, Mich.	3d “	25
Chas. McClave, New London, O.	Best Cockerel	1 25
W. T. Elliott, Bloomingburg, O.	2d “	75
E. T. Overholser, York, O.	3d “	25
Chas. McClave, New London, O.	Best Hen	1 25
W. T. Elliott, Bloomingburg, O.	2d “	75
W. T. Elliott, Bloomingburg, O.	3d “	25
Chas. McClave, New London, O.	Best Pullet	1 25
Chas. McClave, New London, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
Chas. McClave, New London, O.	Best Breeding Pen	2 00
W. T. Elliott, Bloomingburg, O.	2d “ “	1 00
Buff Plymouth Rocks.		
Julius Frank & Son, Sherbondy, O.	Best Cock	1 25
Chas. McClave, New London, O.	2d “	75
Julius Frank & Son, Sherbondy, O.	3d “	25
Julius Frank & Son, Sherbondy, O.	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa.	2d “	75
Eugene Sites, Elyria, O.	3d “	25
Armbrust Bros., Armbrust, Pa.	Best Hen	1 25
E. T. Overholser, York, O.	2d “	75
James A. Tucker, Concord, Mich.	3d “	25
James A. Tucker, Concord, Mich.	Best Pullet	1 25
Julius Frank & Son, Sherbondy, O.	2d “	75
James A. Tucker, Concord, Mich.	3d “	25
Julius Frank & Son, Sherbondy, O.	Best Breeding Pen	2 00
Armbrust Bros., Armbrust, Pa.	2d “ “	1 00
Silver Wyandottes.		
Chas. McClave, New London, O.	Best Cock	1 25
M. M. Myers, Marysville, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
James A. Tucker, Concord, Mich.	Best Cockerel	1 25
James A. Tucker, Concord, Mich.	2d “	75
Armbrust Bros., Armbrust, Pa.	3d “	25
James A. Tucker, Concord, Mich.	Best Hen	1 25
M. M. Myers, Marysville, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
James A. Tucker, Concord, Mich.	Best Pullet	1 25
E. T. Overholser, York, O.	2d “	75
James A. Tucker, Concord, Mich.	3d “	25
James A. Tucker, Concord, Mich.	Best Breeding Pen	2 00
Armbrust Bros., Armbrust, Pa.	2d “ “	1 00

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Golden Wyandottes.		
Chas. McClave, New London, O.	Best Cock	$1 25
James A. Tucker, Concord, Mich.	2d "	75
M. M. Myers, Marysville, O.	3d "	25
Chas. McClave, New London, O.	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Chas. McClave, New London, O.	Best Hen	1 25
Chas. McClave, New London, O.	2d "	75
James A. Tucker, Concord, Mich.	3d "	25
Chas. McClave, New London, O.	Best Pullet	1 25
Chas. McClave, New London, O.	2d "	75
James A. Tucker, Concord, Mich.	3d "	25
Chas. McClave, New London, O.	Best Breeding Pen	2 00
James A. Tucker, Concord, Mich.	2d " "	1 00
White Wyandottes.		
Chas. McClave, New London, O.	Best Cock	1 25
Chas. McClave, New London, O.	2d "	75
M. M. Myers, Marysville, O.	3d "	25
Chas. McClave, New London, O.	Best Cockerel	1 25
Chas. McClave, New London, O.	2d "	75
Chas. McClave, New London, O.	3d "	25
Chas. McClave, New London, O.	Best Hen	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Chas. McClave, New London, O.	3d "	25
Chas. McClave, New London, O.	Best Pullet	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Chas. McClave, New London, O.	3d "	25
Chas. McClave, New London, O.	Best Breeding Pen	2 00
James A. Tucker, Concord, Mich.	2d " "	1 00
Black Wyandottes.		
Armbrust Bros., Armbrust, Pa.	Best Cock	1 25
Eugene Sites, Elyria, O.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Cockerel	1 25
James A. Tucker, Concord, Mich.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Hen	1 25
Eugene Sites, Elyria, O.	2d "	75
Longbeach Farm, North Dover, O.	3d "	25
James A. Tucker, Concord, Mich.	Best Pullet	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Breeding Pen	2 00
Eugene Sites, Elyria, O.	2d " "	1 00
Buff Wyandottes.		
Eugene Sites, Elyria, O.	Best Cock	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Cockerel	1 25
Eugene Sites, Elyria, O.	2d "	75
E. T. Overholser, York, O.	3d "	25
Eugene Sites, Elyria, O.	Best Hen	1 25
Eugene Sites, Elyria, O.	2d "	75
Armbrust Bros., Armbrust, Pa.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Pullet	1 25
Eugene Sites, Elyria, O.	2d "	75
Eugene Sites, Elyria, O.	3d "	25
Eugene Sites, Elyria, O.	Best Breeding Pen	2 00
Armbrust Bros., Armbrust, Pa.	2d " "	1 00
Partridge Wyandottes.		
Chas. McClave, New London, O.	Best Cock	1 25
Eugene Sites, Elyria, O.	2d "	75
Eugene Sites, Elyria, O.	Best Cockerel	1 25
Chas. McClave, New London, O.	2d "	75
Longbeach Farm, North Dover, O.	3d "	25
Longbeach Farm, North Dover, O.	Best Hen	1 25
Longbeach Farm, North Dover, O.	2d "	75
Chas. McClave, New London, O.	3d "	25

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Longbeach Farm, North Dover, O	Best Pullet	$1 25
Chas. McClave, New London, O	2d "	75
Eugene Sites, Elyria, O	3d "	25
Longbeach Farm, North Dover, O	Best Breeding Pen	2 00
Eugene Sites, Elyria, O	2d " "	1 00
Silver Penciled Wyandottes.		
Eugene Sites, Elyria, O	Best Cock	1 25
Eugene Sites, Elyria, O	Best Cockerel	1 25
Eugene Sites, Elyria, O	Best Hen	1 25
Eugene Sites, Elyria, O	Best Pullet	1 25
White or Black Java.		
Chas. McClave, New London, O	Best Cock	1 25
Armbrust Bros., Armbrust, Pa	2d "	75
E. T. Overholser, York, O	3d "	25
Chas. McClave, New London, O	Best Cockerel	1 25
Chas. McClave, New London, O	2d "	75
E. T. Overholser, York, O	3d "	25
Chas. McClave, New London, O	Best Hen	1 25
Farber Bros., Sandyville, O	2d "	75
Chas. McClave, New London, O	3d "	25
Armbrust Bros., Armbrust, Pa	Best Pullet	1 25
Chas. McClave, New London, O	2d "	75
Chas. McClave, New London, O	3d "	25
Chas. McClave, New London, O	Best Breeding Pen	2 00
E. T. Overholser, York, O	2d " "	1 00
Mottled Java.		
Armbrust Bros., Armbrust, Pa	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa	Best Hen	1 25
Armbrust Bros., Armbrust, Pa	Best Pullet	1 25
Light Brahma.		
Armbrust Bros., Armbrust, Pa	Best Cock	1 25
Chas. McClave, New London, O	2d "	75
E. T. Overholser, York, O	3d "	25
Chas. McClave, New London, O	Best Cockerel	1 25
James A. Tucker, Concord, Mich	2d "	75
E. T. Overholser, York, O	3d "	25
James A. Tucker, Concord, Mich	Best Hen	1 25
Chas. McClave, New London, O	2d "	75
Chas. McClave, New London, O	3d "	25
James A. Tucker, Concord, Mich	Best Pullet	1 25
Chas. McClave, New London, O	2d "	75
E. T. Overholser, York, O	3d "	25
James A. Tucker, Concord, Mich	Best Breeding Pen	2 00
Chas. McClave, New London, O	2d " "	1 00
Dark Brahma.		
James A. Tucker, Concord, Mich	Best Cock	1 25
C. E. Cramer, Columbus, O	2d "	75
S. E. Wurst, Elyria, O	3d "	25
C. E. Cramer, Columbus, O	Best Cockerel	1 25
James A. Tucker, Concord, Mich	2d "	75
Eugene Sites, Elyria, O	3d "	25
C. E. Cramer, Columbus, O	Best Hen	1 25
James A. Tucker, Concord, Mich	2d "	75
C. E. Cramer, Columbus, O	3d "	25
James A. Tucker, Concord, Mich	Best Pullet	1 25
James A. Tucker, Concord, Mich	2d "	75
C. E. Cramer, Columbus, O	3d "	25
James A. Tucker, Concord, Mich	Best Breeding Pen	2 00
C. E. Cramer, Columbus, O	2d " "	1 00
Buff Cochin.		
James A. Tucker, Concord, Mich	Best Cock	1 25
E. J. Haskins, Wakeman, O	2d "	75
E. T. Overholser, York, O	3d "	25
James A. Tucker, Concord, Mich	Best Cockerel	1 25
James A. Tucker, Concord, Mich	2d "	75
E. T. Overholser, York, O	3d "	25

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Armbrust Bros., Armbrust, Pa............	Best Hen	$1 25
James A. Tucker, Concord, Mich..........	2d “	75
James A. Tucker, Concord, Mich..........	3d “	25
James A. Tucker, Concord, Mich..........	Best Pullet	1 25
James A. Tucker, Concord, Mich..........	2d “	75
E. T. Overholser, York, O................	3d “	25
James A. Tucker, Concord, Mich...........	Best Breeding Pen	2 00
E. J. Haskins, Wakeman, O................	2d “ “	1 00
Partridge Cochin.		
James A. Tucker, Concord, Mich...........	Best Cock	1 25
Chas. McClave, New London, O...........	2d “	75
James A. Tucker, Concord, Mich..........	3d “	25
James A. Tucker, Concord, Mich..........	Best Cockerel	1 25
James A. Tucker, Concord, Mich..........	2d “	75
Armbrust Bros., Armbrust, Pa...........	3d “	25
C. E. Cramer, Columbus, O................	Best Hen	1 25
James A. Tucker, Concord, Mich..........	2d “	75
James A. Tucker, Concord, Mich..........	3d “	25
James A. Tucker, Concord, Mich..........	Best Pullet	1 25
C. E. Cramer, Columbus, O................	2d “	75
Armbrust Bros., Armbrust, Pa............	3d “	25
James A. Tucker, Concord, Mich..........	Best Breeding Pen................	2 00
C. E. Cramer, Columbus, O................	2d “ “	1 00
White Cochin.		
Armbrust Bros., Armbrust, Pa.............	Best Cock	1 25
James A. Tucker, Concord, Mich..........	2d “	75
James A. Tucker, Concord, Mich..........	Best Cockerel	1 25
James A. Tucker, Concord, Mich..........	2d “	75
Armbrust Bros., Armbrust, Pa............	3d “	25
James A. Tucker, Concord, Mich...........	Best Hen	1 25
Armbrust Bros., Armbrust, Pa.............	2d “	75
James A. Tucker, Concord, Mich..........	3d “	25
James A. Tucker, Concord, Mich..........	Best Pullet	1 25
James A. Tucker, Concord, Mich..........	2d “	75
Armbrust Bros., Armbrust, Pa............	3d “	25
James A. Tucker, Concord, Mich..........	Best Breeding Pen	2 00
Black Cochin.		
James A. Tucker, Concord, Mich..........	Best Cock	1 25
Armbrust Bros., Armbrust, Pa............	2d “	75
James A. Tucker, Concord, Mich..........	3d “	25
James A. Tucker, Concord, Mich..........	Best Cockerel	1 25
Farber Bros., Sandyville, O..............	2d “	75
Chas. McClave, New London, O...........	3d “	25
Armbrust Bros., Armbrust, Pa............	Best Hen	1 25
Armbrust Bros., Armbrust, Pa............	2d “	75
James A. Tucker, Concord, Mich..........	3d “	25
Farber Bros., Sandyville, O...............	Best Pullet	1 25
Chas. McClave, New London, O...........	2d “	75
James A. Tucker, Concord, Mich..........	3d “	25
James A. Tucker, Concord, Mich..........	Best Breeding Pen	2 00
Black Langshan.		
M. M. Myers, Marysville, O................	Best Cock	1 25
Armbrust Bros., Armbrust, Pa.............	2d “	75
C. E. Adair, Columbus, O.................	3d “	25
Armbrust Bros., Armbrust, Pa............	Best Cockerel	1 25
E. J. Haskins, Wakeman, O...............	2d “	75
M. M. Myers, Marysville, O...............	3d “	25
M. M. Myers, Marysville, O...............	Best Hen	1 25
Chas. McClave, New London, O...........	2d “	75
R. D. Button, Canastota, N. Y...........	3d “	25
E. J. Haskins, Wakeman, O...............	Best Pullet	1 25
E. J. Haskins, Wakeman, O...............	2d “	75
Armbrust Bros., Armbrust, Pa............	3d “	25
R. D. Button, Canastota, N. Y............	Best Breeding Pen	2 00
White Langshan.		
E. T. Overholser, York, O.................	Best Cock	1 25
E. T. Overholser, York, O.................	2d “	75
E. J. Haskins, Wakeman, O...............	3d “	25

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
E. J. Haskins, Wakeman, O	Best Cockerel	$1 25
E. T. Overholser, York, O	2d "	75
E. T. Overholser, York, O	Best Hen	1 25
E. T. Overholser, York, O	Best Pullet	1 25
E. T. Overholser, York, O	2d "	75
S. C. Brown Leghorn.		
Chas. McClave, New London, O	Best Cock	1 25
James A. Tucker, Concord, Mich	2d "	75
C. E. Adair, Columbus, O	3d "	25
James A. Tucker, Concord, Mich	Best Cockerel	1 25
Chas. McClave, New London, O	2d "	75
Eugene Sites, Elyria, O	3d "	25
Chas. McClave, New London, O	Best Hen	1 25
C. L. Helsel, Groveport, O	2d "	75
C. M. Bell, Ashley, O	3d "	25
Chas. McClave, New London, O	Best Pullet	1 25
Chas. McClave, New London, O	2d "	75
James A. Tucker, Concord, Mich	3d "	25
Chas. McClave, New London, O	Best Breeding Pen	2 00
James A. Tucker, Concord, Mich	2d " "	1 00
R. C. Brown Leghorn.		
Armbrust Bros., Armbrust, Pa	Best Cock	1 25
Chas. McClave, New London, O	2d "	75
E. J. Haskins, Wakeman, O	3d "	25
M. M. Myers, Marysville, O	Best Cockerel	1 25
E. J. Haskins, Wakeman, O	2d "	75
Chas. McClave New London, O	3d "	25
R. D. Button, Canastota, N. Y	Best Hen	1 25
Farber Bros., Sandyville, O	2d "	75
R. D. Button, Canastota, N. Y	3d "	25
M. M. Myers, Marysville, O	Best Pullet	1 25
R. D. Button, Canastota, N. Y	2d "	75
Chas. McClave, New London, O	3d "	25
R. D. Button, Canastota, N. Y	Best Breeding Pen	2 00
Chas. McClave, New London, O	2d " "	1 00
S. C. White Leghorn.		
Armbrust Bros., Armbrust, Pa	Best Cock	1 25
Chas. McClave, New London, O	2d "	75
James A. Tucker, Concord, Mich	3d "	25
Armbrust Bros., Armbrust, Pa	Best Cockerel	1 25
S. E. Wurst, Elyria, O	2d "	75
Armbrust Bros., Armbrust, Pa	3d "	25
Chas. McClave, New London, O	Best Hen	1 25
James A. Tucker, Concord, Mich	2d "	75
Chas. McClave, New London, O	3d "	25
Armbrust Bros., Armbrust, Pa	Best Pullet	1 25
E. T. Overholser, York, O	2d "	75
Chas. McClave, New London, O	3d "	25
Chas. McClave, New London, O	Best Breeding Pen	2 00
James A. Tucker, Concord, Mich	2d " "	1 00
R. C. White Leghorn.		
L. C. Hills, Delaware, O	Best Cock	1 25
Chas. McClave, New London, O	2d "	75
Armbrust Bros., Armbrust, Pa	3d "	25
L. C. Hills, Delaware, O	Best Cockerel	1 25
S. E. Wurst, Elyria, O	2d "	75
R. D. Button, Canastota, N. Y	3d "	25
L. C. Hills, Delaware, O	Best Hen	1 25
L. C. Hills, Delaware, O	2d "	75
Armbrust Bros., Armbrust, Pa	3d "	25
L. C. Hills, Delaware, O	Best Pullet	1 25
L. C. Hills, Delaware, O	2d "	75
Armbrust Bros., Armbrust, Pa	3d "	25
L. C. Hills, Delaware, O	Best Breeding Pen	2 00
Armbrust Bros., Armbrust, Pa	2d " "	1 00

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Black Leghorn.		
E. J. Haskins, Wakeman, O.	Best Cock	$1 25
M. M. Myers, Marysville, O.	2d “	75
Farber Bros., Sandyville, O.	3d “	25
S. E. Wurst, Elyria, O.	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
S. E. Wurst, Elyria, O.	Best Hen	1 25
Armbrust Bros., Armbrust, Pa.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
Eugene Sites, Elyria, O.	Best Pullet	1 25
E. J. Haskins, Wakeman, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
Buff Leghorn.		
Eugene Sites, Elyria, O.	Best Cock	1 25
Armbrust Bros., Armbrust, Pa.	2d “	75
Eugene Sites, Elyria, O.	3d “	25
Eugene Sites, Elyria, O.	Best Cockerel	1 25
Eugene Sites, Elyria, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
E. T. Overholser, York, O.	Best Hen	1 25
Eugene Sites, Elyria, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
Eugene Sites, Elyria, O.	Best Pullet	1 25
Eugene Sites, Elyria, O.	2d “	75
E. T. Overholser, York O.	3d “	25
Eugene Sites, Elyria, O.	Best Breeding Pen	2 00
E. T. Overholser, York, O.	2d “ “	1 00
Black Minorca.		
C. E. Adair, Columbus, O.	Best Cock	1 25
S. E. Wurst, Elyria, O.	2d “	75
M. M. Myers, Marysville, O.	3d “	25
E. T. Overholser, York, O.	Best Cockerel	1 25
M. M. Myers, Marysville, O.	Best Hen	1 25
S. E. Wurst, Elyria, O.	2d “	75
E. T. Overholser, York, O.	3d “	25
E. T. Overholser, York, O.	Best Pullet	1 25
White Minorca.		
M. M. Myers, Marysville, O.	Best Cock	1 25
E. J. Haskins, Wakeman, O.	2d “	75
E. J. Haskins, Wakeman, O.	Best Cockerel	1 25
M. M. Myers, Marysville, O.	Best Hen	1 25
E. J. Haskins, Wakeman, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
E. J. Haskins, Wakeman, O.	Best Pullet	1 25
E. J. Haskins, Wakeman, O.	2d “	75
E. J. Haskins, Wakeman, O.	Best Breeding Pen	2 00
Blue Andalusian.		
S. E. Wurst, Elyria, O.	Best Cock	1 25
M. M. Myers, Marysville, O.	2d “	75
Farber Bros., Sandyville, O.	3d “	25
M. M. Myers, Marysville, O.	Best Cockerel	1 25
E. J. Haskins, Wakeman, O.	2d “	75
E. J. Haskins, Wakeman, O.	Best Hen	1 25
S. E. Wurst, Elyria, O.	2d “	75
M. M. Myers, Marysville, O.	3d “	25
M. M. Myers, Marysville, O.	Best Pullet	1 25
E. J. Haskins, Wakeman, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
Black Spanish.		
Armbrust Bros., Armbrust, Pa.	Best Cock	1 25
E. J. Haskins, Wakeman, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
Armbrust Bros., Armbrust, Pa.	Best Cockerel	1 25
E. J. Haskins, Wakeman, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
E. J. Haskins, Wakeman, O	Best Hen	$1 25
E. J. Haskins, Wakeman, O	2d “	75
Armbrust Bros., Armbrust, Pa	3d “	25
Armbrust Bros., Armbrust, Pa	Best Pullet	1 25
E. J. Haskins, Wakeman, O	2d “	75
E. J. Haskins, Wakeman, O	3d “	25
W. C. Black Polish.		
Chas. McClave, New London, O	Best Cock	1 25
S. E. Wurst, Elyria, O	2d “	75
Julius Frank & Son, Sherbondy, O	3d “	25
James A. Tucker, Concord, Mich	Best Cockerel	1 25
E. T. Overholser, York, O	2d “	75
James A. Tucker, Concord, Mich	3d “	25
E. T. Overholser, York, O	Best Hen	1 25
Chas. McClave, New London, O	2d “	75
Julius Frank & Son, Sherbondy, O	3d “	25
Julius Frank & Son, Sherbondy, O	Best Pullet	1 25
Julius Frank & Son, Sherbondy, O	2d “	75
E. T. Overholser, York, O	3d “	25
Julius Frank & Son., Sherbondy, O	Best Breeding Pen	2 00
Silver Polish—Bearded or Plain.		
James A. Tucker, Concord, Mich	Best Cock	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
Armbrust Bros., Armbrust, Pa	3d “	25
Armbrust Bros., Armbrust, Pa	Best Cockerel	1 25
James A. Tucker, Concord, Mich	2d “	75
Armbrust Bros., Armbrust, Pa	3d “	25
James A. Tucker, Concord, Mich	Best Hen	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
E. J. Haskins, Wakeman, O	3d “	25
Armbrust Bros., Armbrust, Pa	Best Pullet	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
James A. Tucker, Concord, Mich	3d “	25
White Polish—Bearded or Plain.		
James A. Tucker, Concord, Mich	Best Cock	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
James A. Tucker, Concord, Mich	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
James A. Tucker, Concord, Mich	Best Hen	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
James A. Tucker, Concord, Mich	Best Pullet	1 25
Golden Polish—Bearded or Plain.		
James A. Tucker, Concord, Mich	Best Cock	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
Armbrust Bros., Armbrust, Pa	3d “	25
Armbrust Bros., Armbrust, Pa	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
James A. Tucker, Concord, Mich	Best Hen	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
E. J. Haskins, Wakeman, O	3d “	25
James A. Tucker, Concord, Mich	Best Pullet	1 25
Buff Laced Polish.		
James A. Tucker, Concord, Mich	Best Cock	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
James A. Tucker, Concord, Mich	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
James A. Tucker, Concord, Mich	Best Hen	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
Farber Bros., Sandyville, O	3d “	25
James A. Tucker, Concord, Mich	Best Pullet	1 25
Armbrust Bros., Armbrust, Pa	2d “	75
Golden Spangled Hamburg.		
Armbrust Bros., Armbrust, Pa	Best Cock	1 25
Julius Frank & Son, Sherbondy, O	Best Cockerel	1 25
Julius Frank & Son, Sherbondy, O	2d “	75

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Julius Frank & Son, Sherbondy, O.	Best Hen	$1 25
Julius Frank & Son, Sherbondy, O.	2d "	75
Armbrust Bros., Armbrust, Pa.	3d "	25
Julius Frank & Son, Sherbondy, O.	Best Pullet	1 25
Julius Frank & Son, Sherbondy, O.	2d "	75
Julius Frank & Son, Sherbondy, O.	Best Breeding Pen	2 00
Silver Spangled Hamburg.		
Julius Frank & Son, Sherbondy, O.	Best Cock	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
E. J. Haskins, Wakeman, O.	3d "	25
Julius Frank & Son, Sherbondy, O.	Best Cockerel	1 25
Eugene Sites, Elyria, O.	2d "	75
Julius Frank & Son, Sherbondy, O.	3d "	25
E. J. Haskins, Wakeman, O.	Best Hen	1 25
Julius Frank & Son, Sherbondy, O.	2d "	75
Julius Frank & Son, Sherbondy, O.	3d "	25
Julius Frank & Son, Sherbondy, O.	Best Pullet	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
E. J. Haskins, Wakeman, O.	3d "	25
Julius Frank & Son, Sherbondy, O.	Best Breeding Pen	2 00
E. J. Haskins, Wakeman, O.	2d " "	1 00
Golden Penciled Hamburg.		
Armbrust Bros., Armbrust, Pa.	Best Cock	1 25
S. E. Wurst, Elyria, O.	2d "	75
Julius Frank & Son, Sherbondy, O.	3d "	25
Julius Frank & Son, Sherbondy, O.	Best Cockerel	1 25
Julius Frank & Son, Sherbondy, O.	2d "	75
Armbrust Bros., Armbrust, Pa.	3d "	25
Julius Frank & Son, Sherbondy, O.	Best Hen	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Julius Frank & Son, Sherbondy, O.	3d "	25
Julius Frank & Son, Sherbondy, O.	Best Pullet	1 25
Julius Frank & Son, Sherbondy, O.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Silver Penciled Hamburg.		
Julius Frank & Son, Sherbondy, O.	Best Cock	1 25
Farber Bros., Sandyville, O.	2d "	75
Julius Frank & Son, Sherbondy, O.	3d "	25
Julius Frank & Son, Sherbondy, O.	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
E. J. Haskins, Wakeman, O.	3d "	25
Julius Frank & Son, Sherbondy, O.	Best Hen	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Armbrust Bros., Armbrust, Pa.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Pullet	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Julius Frank & Son, Sherbondy, O.	3d "	25
Black Hamburg.		
Julius Frank & Son, Sherbondy, O.	Best Cock	1 25
Julius Frank & Son, Sherbondy, O.	2d "	75
Chas. McClave, New London, O.	3d "	25
E. J. Haskins, Wakeman, O.	Best Cockerel	1 25
E. J. Haskins, Wakeman, O.	2d "	75
Julius Frank & Son, Sherbondy, O.	3d "	25
E. J. Haskins, Wakeman, O.	Best Hen	1 25
Julius Frank & Son, Sherbondy, O.	2d "	75
Julius Frank & Son, Sherbondy, O.	3d "	25
Chas. McClave, New London, O.	Best Pullet	1 25
Julius Frank & Son, Sherbondy, O.	2d "	75
Julius Frank & Son, Sherbondy, O.	3d "	25
White Hamburg.		
Julius Frank & Son, Sherbondy, O.	Best Cock	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Julius Frank & Son, Sherbondy, O.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Cockerel	1 25
Julius Frank & Son, Sherbondy, O.	2d "	75

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Julius Frank & Son, Sherbondy, O.	Best Hen	$1 25
Julius Frank & Son, Sherbondy, O.	2d "	75
Farber Bros., Sandyville, O.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Pullet	1 25
Julius Frank & Son, Sherbondy, O.	2d "	75
Houdan.		
Armbrust Bros., Armbrust, Pa.	Best Cock	1 25
S. E. Wurst, Elyria, O.	2d "	75
James A. Tucker, Concord, Mich.	3d "	25
James A. Tucker, Concord, Mich.	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
James A. Tucker, Concord, Mich.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Hen	1 25
E. T. Overholser, York, O.	2d "	75
E. T. Overholser, York, O.	3d "	25
James A. Tucker, Concord, Mich.	Best Pullet	1 25
James A. Tucker, Concord, Mich.	2d "	75
Armbrust Bros., Armbrust, Pa.	3d "	25
James A. Tucker, Concord, Mich.	Best Breeding Pen	2 00
E. T. Overholser, York, O.	2d " "	1 00
Crevecoeur or LaFleche.		
Eugene Sites, Elyria, O.	Best Cock	1 25
Eugene Sites, Elyria, O.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
James A. Tucker, Concord, Mich.	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Armbrust Bros., Armbrust, Pa.	3d "	25
Eugene Sites, Elyria, O.	Best Hen	1 25
Eugene Sites, Elyria, O.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Pullet	1 25
James A. Tucker, Concord, Mich.	2d "	75
Armbrust Bros., Armbrust, Pa.	3d "	25
Colored, Silver, Gray or White Dorking.		
Armbrust Bros., Armbrust, Pa.	Best Cock	1 25
M. M. Myers, Marysville, O.	2d "	75
R. D. Button, Canastota, N. Y.	3d "	25
R. D. Button, Canastota, N. Y.	Best Cockerel	1 25
S. E. Wurst, Elyria, O.	2d "	75
M. M. Myers, Marysville, O.	3d "	25
M. M. Myers, Marysville, O.	Best Hen	1 25
R. D. Button, Canastota, N. Y.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
James A. Tucker, Concord, Mich.	Best Pullet	1 25
M. M. Myers, Marysville, O.	2d "	75
Armbrust Bros., Armbrust, Pa.	3d "	25
Black Breasted Red Game.		
Armbrust Bros., Armbrust, Pa.	Best Cock	1 25
Eugene Sites, Elyria, O.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
S. E. Wurst, Elyria, O.	Best Cockerel	1 25
Eugene Sites, Elyria, O.	Best Hen	1 25
Eugene Sites, Elyria, O.	2d "	75
Armbrust Bros., Armbrust, Pa.	3d "	25
S. E. Wurst, Elyria, O.	Best Pullet	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Brown Red Game.		
Eugene Sites, Elyria, O.	Best Cock	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
S. E. Wurst, Elyria, O.	Best Cockerel	1 25
Eugene Sites, Elyria, O.	2d "	75
Eugene Sites, Elyria, O.	Best Hen	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Eugene Sites, Elyria, O.	3d "	25
S. E. Wurst, Elyria, O.	Best Pullet	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Birchen Game.		
Eugene Sites, Elyria, O.	Best Hen	$1 25
Black and White Game.		
Armbrust Bros., Armbrust, Pa.	Best Cock	1 25
Longbeach Farm, North Dover, O.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Eugene Sites, Elyria, O.	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Armbrust Bros., Armbrust, Pa.	Best Hen	1 25
Longbeach Farm, North Dover, O.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Pullet	1 25
Sumatra Game.		
S. E. Wurst, Elyria, O.	Best Cock	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
M. M. Myers, Marysville, O.	3d "	25
Eugene Sites, Elyria, O.	Best Cockerel	1 25
S. E. Wurst, Elyria, O.	2d "	75
M. M. Myers, Marysville, O.	Best Hen	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Pullet	1 25
Eugene Sites, Elyria, O.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Silver or Golden Duck-Wing Game.		
Eugene Sites, Elyria, O.	Best Cock	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Armbrust Bros., Armbrust, Pa.	3d "	25
Armbrust Bros., Armbrust, Pa.	Best Cockerel	1 25
S. E. Wurst, Elyria, O.	2d "	75
Armbrust Bros., Ambrust, Pa.	3rd "	25
Eugene Sites, Elyria, O.	Best Hen	1 25
Eugene Sites, Elyria, O.	2d "	75
Armbrust Bros., Ambrust, Pa.	3d "	25
Eugene Sites, Elyria, O.	Best Pullet	1 25
Armbrust Bros., Ambrust, Pa.	2d "	75
Armbrust Bros., Ambrust, Pa.	3d "	25
Red Pile Game.		
Eugene Sites, Elyria, O.	Best Cock	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
S. E. Wurst, Elyria, O.	3d "	25
Eugene Sites, Elyria, O.	Best Cockerel	1 25
S. E. Wurst, Elyria, O.	2d "	75
Armbrust Bros., Armbrust, Pa.	Best Hen	1 25
S. E. Wurst, Elyria, O.	2d "	75
Eugene Sites, Elyria, O.	3d "	25
Eugene Sites, Elyria, O.	Best Pullet	1 25
Eugene Sites, Elyria, O.	2d "	75
Cornish Indian Game.		
James A. Tucker, Concord, Mich.	Best Cock	1 25
James A. Tucker, Concord, Mich.	2d "	75
E. J. Haskins, Wakeman, O.	3d "	25
James A. Tucker, Concord, Mich.	Best Cockerel	1 25
James A. Tucker, Concord, Mich.	2d "	75
E. J. Haskins, Wakeman, O.	3d "	25
James A. Tucker, Concord, Mich.	Best Hen	1 25
E. J. Haskins, Wakeman, O.	2d "	75
James A. Tucker, Concord, Mich.	3d "	25
James A. Tucker, Concord, Mich.	Best Pullet	1 25
James A. Tucker, Concord, Mich.	2d "	75
E. J. Haskins, Wakeman, O.	3d "	25
James A. Tucker, Concord, Mich.	Best Breeding Pen	2 00
E. J. Haskins, Wakeman, O.	2d "	1 00

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
B. B. R. Bantam.		
Eugene Sites, Elyria, O	Best Cock	$1 25
Chas. McClave, New London, O	2d "	75
E. T. Overholser, York, O	Best Cockerel	1 25
Chas. McClave, New London, O	2d "	75
Chas. McClave, New London, O	Best Hen	1 25
Eugene Sites, Elyria, O	2d "	75
S. E. Wurst, Elyria, O	Best Pullet	1 25
James A. Tucker, Concord, Mich	2d "	75
Chas. McClave, New London, O	Best Breeding Pen	2 00
Silver or Golden Duck-Wing Bantam.		
Armbrust Bros., Armbrust, Pa	Best Cock	1 25
Eugene Sites, Elyria, O	2d "	75
Eugene Sites, Elyria, O	Best Cockerel	1 25
S. E. Wurst, Elyria, O	2d "	75
Armbrust Bros., Armbrust, Pa	Best Hen	1 25
Eugene Sites, Elyria, O	2d "	75
Armbrust Bros., Armbrust, Pa	Best Pullet	1 25
Armbrust Bros., Armbrust, Pa	2d "	75
Red Pile Bantam.		
Eugene Sites, Elyria, O	Best Cock	1 25
S. E. Wurst, Elyria, O	2d "	75
Eugene Sites, Elyria, O	Best Cockerel	1 25
S. E. Wurst, Elyria, O	2d "	75
Eugene Sites, Elyria, O	Best Hen	1 25
Eugene Sites, Elyria, O	2d "	75
Armbrust Bros., Armbrust, Pa	Best Pullet	1 25
S. E. Wurst, Elyria, O	2d "	75
Golden Seabright Bantam.		
James A. Tucker, Concord, Mich	Best Cock	1 25
E. T. Overholser, York, O	2d "	75
Armbrust Bros., Armbrust, Pa	Best Cockerel	1 25
S. E. Wurst, Elyria, O	2d "	75
James A. Tucker, Concord, Mich	Best Hen	1 25
Armbrust Bros., Armbrust, Pa	2d "	75
Armbrust Bros., Armbrust, Pa	Best Pullet	1 25
S. E. Wurst, Elyria, O	2d "	75
Silver Seabright Bantam.		
Eugene Sites, Elyria, O	Best Cock	1 25
E. T. Overholser, York, O	2d "	75
E. T. Overholser, York, O	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa	2d "	75
Chas. McClave, New London, O	Best Hen	1 25
Chas. McClave, New London, O	2d "	75
Armbrust Bros., Armbrust, Pa	Best Pullet	1 25
E. T. Overholser, York, O	2d "	75
Armbrust Bros., Armbrust, Pa	Best Breeding Pen	2 00
Buff Cochin Bantam.		
M. M. Myes, Marysville, O	Best Cock	1 25
James A. Tucker, Concord, Mich	2d "	75
James A. Tucker, Concord, Mich	Best Cockerel	1 25
Armbrust Bros., Armbrust, Pa	2d "	75
M. M. Myers, Marysville, O	Best Hen	1 25
James A. Tucker, Concord, Mich	2d "	75
E. T. Overholser, York, O	Best Pullet	1 25
James A. Tucker, Concord, Mich	2d "	75
Armbrust Bros., Armbrust, Pa	Best Breeding Pen	2 00
R. D. Button, Canastota, N. Y	2d " "	1 00
White or Black Cochin Bantam.		
James A. Tucker, Concord, Mich	Best Cock	1 25
Armbrust Bros., Armbrust, Pa	2d "	75
James A. Tucker, Concord, Mich	Best Cockerel	1 25
E. T. Overholser, York, O	2d "	75
E. Henry Golensha, Ensley, Ala	Best Hen	1 25
Armbrust Bros., Armbrust, Pa	2d "	75
E. T. Overholser, York, O	Best Pullett	1 25
James A. Tucker, Concord, Mich	2d "	75

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
White or Black Rose Combed Bantam.		
Chas. McClave, New London, O.	Best Cock	$1 25
James A. Tucker, Concord, Mich.	2d "	75
James A. Tucker, Concord, Mich.	Best Cockerel	1 25
Chas. McClave, New London, O.	2d "	75
Chas. McClave, New London, O.	Best Hen	1 25
James A. Tucker, Concord, Mich.	2d "	75
Chas. McClave, New London, O.	Best Pullet	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
Japanese Bantam.		
James A. Tucker, Concord, Mich.	Best Cock	1 25
Armbrust Bros., Armbrust, Pa.	2d "	75
James A. Tucker, Concord, Mich.	Best Cockerel	1 25
James A. Tucker, Concord, Mich.	2d "	75
James A. Tucker, Concord, Mich.	Best Hen	1 25
Chas. McClave, New London, O.	2d "	75
Armbrust Bros., Armbrust, Pa.	Best Pullet	1 25
James A. Tucker, Concord, Mich.	2d "	75

TURKEYS.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Bronze Turkeys.		
Fred Anthony, North Lawrence, O.	Best Cock	$1 50
Geo. Brown, Nevin, O.	2d "	80
C. M. Bell, Ashley, O.	3d "	40
Geo. Brown, Nevin, O.	Best Cockerel	1 50
Geo. Brown, Nevin, O.	Best Hen	1 50
Fred Anthony, North Lawrence, O.	2d "	80
Fred Anthony, North Lawrence, O.	3d "	40
Geo. Brown, Nevin, O.	Best Pullet	1 50
White Turkeys.		
Chas. McClave, New London, O.	Best Cock	1 50
S. E. Wurst, Elyria, O.	2d "	80
E. J. Haskins, Wakeman, O.	3d "	40
Chas. McClave, New London, O.	Best Cockerel	1 50
S. E. Wurst, Elyria, O.	Best Hen	1 50
E. J. Haskins, Wakeman, O.	2d "	80
Chas. McClave, New London, O.	3d "	40
Chas. McClave, New London, O.	Best Pullet	1 50
Buff Turkeys.		
E. J. Haskins, Wakeman, O.	Best Cock	1 50
M. M. Myers, Marysville, O.	2d "	80
E. J. Haskins, Wakeman, O.	Best Hen	1 50
M. M. Myers, Marysville, O.	2d "	80
Narraganset Turkeys.		
G. W. Gillet Wellington, O.	Best Cock	1 50
G. W. Gillet, Wellington, O.	2d "	80
Chas. McClave, New London, O.	Best Cockerel	1 50
G. W. Gillet, Wellington, O.	Best Hen	1 50
G. W. Gillet, Wellington, O.	2d "	80
Chas. McClave, New London, O.	Best Pullet	1 50
Black Turkeys.		
Chas. McClave, New London, O.	Best Cock	1 50
M. M. Myers, Marysville, O.	2d "	80
E. J. Haskins, Wakeman, O.	3d "	40
E. J. Haskins, Wakeman, O.	Best Cockerel	1 50
Chas. McClave, New London, O.	2d "	80

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
M. M. Myers, Marysville, O.	Best Hen	$1 50
Chas. McClave, New London, O.	2d “	80
E. J. Haskins, Wakeman, O.	3d “	40
Chas. McClave, New London, O.	Best Pullet	1 50
E. J. Haskins, Wakeman, O.	2d “	80
Slate Turkeys.		
M. M. Myers, Marysville, O.	Best Cock	1 50
S. E. Wurst, Elyria, O.	2d “	80
Chas. McClave, New London. O.	3d “	40
S. E. Wurst, Elyria, O.	Best Cockerel	1 50
M. M. Myers, Marysville, O.	Best Hen	1 50
S. E. Wurst, Elyria, O.	2d “	80
S. E. Wurst, Elyria, O.	Best Pullet	1 50

DUCKS

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Pekin Ducks.		
E. J. Haskins, Wakeman, O.	Best Cock	1 25
Chas. McClave, New London, O.	2d “	75
Longbeach Farm, North Dover, O.	3d “	25
Chas. McClave, New London, O.	Best Cockerel	1 25
S. E. Wurst, Elyria, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
E. J. Haskins, Wakeman, O.	Best Hen	1 25
E. J. Haskins, Wakeman, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
E. J. Haskins, Wakeman, O.	Best Pullet	1 25
E. J. Haskins, Wakeman, O.	2d “	75
Chas. McClave, New London, O.	3d “	25
Aylesbury Ducks.		
Chas. McClave, New London. O.	Best Cock	1 25
E. J. Haskins, Wakeman, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
Farber Bros., Sandyville, O.	Best Cockerel	1 25
M. M. Myers, Marysville, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
S. E. Wurst, Elyria, O.	Best Hen	1 25
Chas. McClave, New London, O.	2d “	75
E. J. Haskins. Wakeman, O.	3d “	25
S. E. Wurst, Elyria, O.	Best Pullet	1 25
E. J. Haskins, Wakeman, O.	2d “	75
Chas. McClave, New London, O.	3d “	25
Rouen Ducks.		
Chas. McClave, New London, O.	Best Cock	1 25
Chas. McClave. New London, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
S. E. Wurst, Elyria, O.	Best Cockerel	1 25
E. J. Haskins. Wakeman. O.	2d “	75
M. M. Myers, Marysville, O.	3d “	25
Chas. McClave, New London, O.	Best Hen	1 25
Chas. McClave, New London, O.	2d “	75
E. J. Haskins, Wakeman. O.	3d “	25
M. M. Myers, Marysville, O.	Best Pullet	1 25
E. J. Haskins, Wakeman, O.	2d “	75
Chas. McClave, New London, O.	3d “	25
Cayuga Ducks.		
E. J. Haskins, Wakeman. O.	Best Cock	1 25
Chas. McClave, New London, O.	2d “	75
Farber Bros., Sandyville, O.	3d “	25
E. J. Haskins, Wakeman, O.	Best Cockerel	1 25
E. J. Haskins, Wakeman, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Chas. McClave, New London, O.	Best Hen	$1 25
Farber Bros., Sandyville, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
E. J. Haskins, Wakeman, O.	Best Pullet	1 25
E. J. Haskins, Wakeman, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
Crested White Ducks.		
E. J. Haskins, Wakeman, O.	Best Cock	1 25
Chas. McClave, New London, O.	2d “	75
R. D. Button, Canastota, N. Y.	3d “	25
E. J. Haskins, Wakeman, O.	Best Cockerel	1 25
E. J. Haskins, Wakeman, O.	2d “	75
R. D. Button, Canastota, N. Y.	Best Hen	1 25
Chas. McClave, New London, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
Gray Call Ducks.		
Chas. McClave, New London,	Best Cock	1 25
M. M. Myers, Marysville, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
Chas. McClave, New London,	Best Cockerel	1 25
Chas. McClave, New London,	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
Chas. McClave, New London,	Best Hen	1 25
M. M. Myers, Marysville, O.	2d “	75
S. E. Wurst, Elyria, O.	3d “	25
Chas. McClave, New London,	Best Pullet	1 25
S. E. Wurst, Elyria, O.	2d “	75
Longbeach Farm, North Dover, O.	3d “	25
White Call Ducks.		
M. M. Myers, Marysville, O.	Best Cock	1 25
R. D. Button, Canastota, N. Y.	2d “	75
M. M. Myers, Marysville, O.	Best Cockerel	1 25
M. M. Myers, Marysville, O.	2d “	75
M. M. Myers, Marysville, O.	Best Hen	1 25
Farber Bros., Sandyville, O.	2d “	75
R. D. Button, Canastota, N. Y.	3d “	25
Longbeach Farm, North Dover, O.	Best Pullet	1 25
M. M. Myers, Marysville, O.	2d “	75
M. M. Myers, Marysville, O.	3d “	25
Muscovey Colored Ducks.		
Chas. McClave, New London,	Best Cock	1 25
E. J. Haskins, Wakeman, O.	2d “	75
Farber Bros., Sandyville, O.	3d “	25
Chas. McClave, New London,	Best Cockerel	1 25
Chas. McClave, New London,	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
Farber Bros., Sandyville, O.	Best Hen	1 25
Chas. McClave, New London, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
Chas. McClave, New London, O.	Best Pullet	1 25
Chas. McClave, New London, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25
Muscovey White Ducks.		
M. M. Myers, Marysville, O.	Best Cock	1 25
Longbeach Farm, North Dover, O.	2d “	75
Chas. McClave, New London, O.	3d “	25
M. M. Myers, Marysville, O.	Best Cockerel	1 25
E. J. Haskins, Wakeman, O.	2d “	75
Chas. McClave, New London, O.	3d “	25
Chas. McClave, New London, O.	Best Hen	1 25
Longbeach Farm, North Dover, O.	2d “	75
Farber Bros., Sandyville, O.	3d “	25
E. J. Haskins, Wakeman, O.	Best Pullet	1 25
Chas. McClave, New London, O.	2d “	75
E. J. Haskins, Wakeman, O.	3d “	25

POULTRY—Continued.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Indian Runner Ducks.		
C. Schwert & Sons, Crestline, O.	Best Cock	$1 25
R. D. Button, Canastota, N. Y.	2d "	75
R. D. Button, Canastota, N. Y.	Best Cockerel	1 25
C. Schwert & Sons, Crestline, O.	2d "	75
Longbeach Farm, North Dover, O.	3d "	25
Chas. McClave, New London, O.	Best Hen	1 25
R. D. Button, Canastota, N. Y.	2d "	75
C. Schwert & Sons, Crestline, O.	3d "	25
R. D. Button, Canastota, N. Y.	Best Pullet	1 25
Longbeach Farm, North Dover, O.	2d "	75
C. Schwert & Sons, Crestline, O.	3d "	25

GEESE.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
Tolouse Geese.		
M. M. Myers, Marysville, O.	Best Cock	$1 50
S. E. Wurst, Elyria, O.	2d "	80
M. M. Myers, Marysville, O.	3d "	40
Chas. McClave, New London,	Best Cockerel	1 50
E. J. Haskins, Wakeman, O.	2d "	80
M. M. Myers, Marysville, O.	Best Hen	1 50
M. M. Myers, Marysville, O.	2d "	80
Chas. McClave, New London,	3d "	40
Chas. McClave, New London,	Best Pullet	1 50
E. J. Haskins, Wakeman, O.	2d "	80
Embden Geese.		
M. M. Myers, Marysville, O.	Best Cock	1 50
E. J. Haskins, Wakeman, O.	2d "	80
S. E. Wurst, Elyria, O.	3d "	40
E. J. Haskins, Wakeman, O.	Best Cockerel	1 50
M. M. Myers, Marysville, O.	2d "	80
E. J. Haskins, Wakeman, O.	3d "	40
S. E. Wurst, Elyria, O.	Best Hen	1 50
Chas. McClave, New London,	3d "	40
M. M. Myers, Marysville, O.	2d "	80
E. J. Haskins, Wakeman, O.	Best Pullet	1 50
M. M. Myers, Marysville, O.	2d "	80
E. J. Haskins, Wakeman, O.	3d "	40
African Geese.		
Chas. McClave, New London, O.	Best Cock	1 50
E. J. Haskins, Wakeman, O.	2d "	80
E. J. Haskins, Wakeman, O.	3d "	40
Chas. McClave, New London, O.	Best Cockerel	1 50
E. J. Haskins, Wakeman, O.	2d "	80
E. J. Haskins, Wakeman, O.	3d "	40
E. J. Haskins, Wakeman, O.	Best Hen	1 50
Chas. McClave, New London, O.	2d "	80
E. J. Haskins, Wakeman, O.	3d "	40
E. J. Haskins, Wakeman, O.	Best Pullet	1 50
Chas. McClave, New London, O.	2d "	80
E. J. Haskins, Wakeman, O.	3d "	40
Brown Chinese Geese.		
M. M. Myers, Marysville, O.	Best Cock	1 50
Longbeach Farm, North Dover, O.	2d "	80
Chas. McClave, New London, O.	3d "	40
Chas. McClave, New London, O.	Best Cockerel	1 50
E. J. Haskins, Wakeman, O.	2d "	80
M. M. Myers, Marysville, O.	3d "	40
Chas. McClave, New London, O.	Best Hen	1 50
E. J. Haskins, Wakeman, O.	2d "	80
M. M. Myers, Marysville, O.	3d "	40
E. J. Haskins, Wakeman, O.	Best Pullet	1 50
Chas. McClave, New London, O.	2d "	80
M. M. Myers, Marysville, O.	3d "	40

POULTRY—Concluded.

Owner's Name and Postoffice.	Kind of Fowl.	Amount.
White Chinese Geese.		
Eugene Sites, Elyria, O.	Best Cock	$1 50
S. E. Wurst, Elyria, O.	2d "	80
Chas. McClave, New London, O.	3d "	40
Chas. McClave, New London, O.	Best Cockerel	1 50
M. M. Myers, Marysville, O.	2d "	80
S. E. Wurst, Elyria, O.	3d "	40
M. M. Myers, Marysville, O.	Best Hen	1 50
Chas. McClave, New London, O.	2d "	80
S. E. Wurst, Elyria, O.	3d "	40
Chas. McClave, New London, O.	Best Pullet	1 50
E. J. Haskins, Wakeman, O.	2d "	80
S. E. Wurst, Elyria, O.	3d "	40
Wild Geese.		
S. E. Wurst, Elyria, O.	Best Cock	1 50
Chas. McClave, New London, O.	2d "	80
Longbeach Farm, North Dover, O.	3d "	40
S. E. Wurst, Elyria, O.	Best Cockerel	1 50
Chas. McClave, New London, O.	Best Hen	1 50
S. E. Wurst, Elyria, O.	Best Pullet	1 50
S. E. Wurst, Elyria, O.	2d "	80
Longbeach Farm, North Dover, O.	3d "	40
Ornamental Class.		
Longbeach Farm, North Dover, O.	Best Pair Ring Neck Pheasants..	2 00
Pigeons.		
Longbeach Farm, North Dover, O.	Best collection, 5 varieties, in pairs.	5 00
Longbeach Farm, North Dover, O.	2d " "	3 00
Class Collections.		
Chas. McClave, New London, O.	Best American Class	3 00
Eugene Sites, Elyria, O.	2d " "	2 00
James A. Tucker, Concord, Mich.	Best Asiatic Class	3 00
Armbrust Bros., Armbrust, Pa.	2d " "	2 00
E. J. Haskins, Wakeman, O.	Best Mediterranean Class	3 00
Armbrust Bros., Armbrust, Pa.	2d " "	2 00
James A. Tucker, Concord, Mich.	Best Polish Class	3 00
Armbrust Bros., Armbrust, Pa.	2d " "	2 00
Julius Frank & Son, Sherbondy, O.	Best Hamburg Class	3 00
Armbrust Bros., Armbrust, Pa.	2d " "	2 00
Eugene Sites, Elyria, O.	Best Game and Game Bantams	3 00
Armbrust Bros., Armbrust, Pa.	2d " " "	2 00
James A. Tucker, Concord, Mich.	Best Bantams, not Game	3 00
Armbrust Bros., Armbrust, Pa.	2d " "	2 00
Chas. McClave, New London, O.	Best Turkeys	3 00
E. J. Haskins, Wakeman, O.	2d "	2 00
Chas. McClave, New London, O.	Best Geese	3 00
E. J. Haskins, Wakeman, O.	2d "	2 00
Chas. McClave, New London, O.	Best Ducks	3 00
E. J. Haskins, Wakeman, O.	2d "	2 00
Ohio Incubator Brooder Co., Columbus, O.	Best Incubator in Operation	Medal.
Buckeye Incubator Co., Springfield, O.	Best Brooder in Operation	Medal.

SIXTH DEPARTMENT—FARM PRODUCTS.

Wm. Miller, Member in Charge.

GRAINS, SEEDS, TOBACCO AND CEREAL MILL PRODUCTS.

Owner's Name and Postoffice.	Name of Article.	Amt.
White Wheats—Smooth.		
F. M. Whipps, Byhalia, O.	Best peck Early White Leader	$2 00
G. B. Gregg, Marysville, O.	2d best peck Early White Leader	1 00
J. L. Keckley, Marysville, O.	Best peck Gold Coin	2 00
G. B. Gregg, Marysville, O.	2d best peck Gold Coin	1 00
G. B. Gregg, Marysville, O.	Best peck International No. 6	2 00
F. M. Whipps, Byhalia, O.	2d best peck International No. 6	1 00
J. L. Keckley, Marysville, O.	Best peck Royal Australian	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Royal Australian	1 00
White Wheats—Bearded.		
J. L. Keckley, Marysville, O.	Best peck Democrat	2 00
J. L. Keckley, Marysville, O.	Best peck Winter Fife	2 00
G. B. Gregg, Marysville, O.	2d best peck Winter Fife	2 00
J. L. Keckley, Marysville, O.	Best peck of any other variety	2 00
F. M. Whipps, Byhalia, O.	2d best peck of any other variety	1 00
Red Wheats—Smooth.		
G. B. Gregg, Marysville, O.	Best peck Poole	2 00
J. L. Keckley, Marysville, O.	2d best peck Poole	1 00
Albert Pearce, North Ridgeville, O.	Best peck Mealy	2 00
F. M. Whipps, Byhalia, O.	2d best peck Mealy	1 00
F. M. Whipps, Byhalia, O.	Best peck Red Russian	2 00
J. L. Keckley, Marysville, O.	2d best peck Red Russian	1 00
Albert Pearce, North Ridgeville, O.	Best peck Early Ripe	2 00
J. L. Keckley, Marysville, O.	2d best peck of Early Ripe	1 00
J. L. Keckley, Marysville, O.	Best peck Fultz	2 00
G. B. Gregg, Marysville, O.	2d best peck Fultz	1 00
Red Wheats—Bearded.		
F. M. Whipps, Byhalia, O.	Best peck Valley	2 00
G. B. Gregg, Marysville, O.	2d best peck Valley	1 00
G. B. Gregg, Marysville, O.	Best peck Velvet Chaff (Penquits)	2 00
F. M. Whipps, Byhalia, O.	2d best peck Velvet Chaff (Penquits)	1 00
J. L. Keckley, Marysville, O.	Best peck Red Cross	2 00
G. B. Gregg, Marysville, O.	2d best peck Red Cross	1 00
J. L. Keckley, Marysville, O.	Best peck Egyptian	2 00
G. B. Gregg, Marysville, O.	2d best peck Egyptian	1 00
G. B. Gregg, Marysville, O.	Best peck Nigger	2 00
J. L. Keckley, Marysville, O.	2d best peck Nigger	1 00
J. L. Keckley, Marysville, O.	Best peck Mediterranean	2 00
F. M. Whipps, Byhalia, O.	2d best peck Mediterranean	1 00
White Oats.		
F. M. Whipps, Byhalia, O.	Best peck Welcome	1 50
J. L. Keckley, Marysville, O.	2d best peck Welcome	75
J. L. Keckley, Marysville, O.	Best peck Lincoln	1 50
F. M. Whipps, Byhalia, O.	2d best peck Lincoln	75
F. M. Whipps, Byhalia, O.	Best peck Improved American	1 50
Albert Pearce, North Ridgeville, O.	2d best peck Improved American	75
J. L. Keckley, Marysville, O.	Best peck White Belgian	1 50
I. B. Keckley, Marysville, O.	2d best peck White Belgian	75
Albert Pearce, North Ridgeville, O.	Best peck Clydesdale	1 50
F. M. Whipps, Byhalia, O.	Best peck Banner	1 50
Albert Pearce, North Ridgeville, O.	2d best peck Banner	75
Black Oats, Barley, Rye, Etc.		
I. B. Keckley, Marysville, O.	Best peck Black Tartarian Oats	1 50
J. L. Keckley, Marysville, O.	2d best peck Black Tartarian Oats	
J. L. Keckley, Marysville, O.	Best peck Black Russian Oats	1 50
I. B. Keckley, Marysville, O.	Best peck Monarch Oats	1 50
Albert Pearce, North Ridgeville, O.	2d best peck Monarch Oats	75
I. B. Keckley, Marysville, O.	Best peck Winter Rye	2 00
J. L. Keckley, Marysville, O.	2d best peck Winter Rye	1 00
J. L. Keckley, Marysville, O.	Best peck Beardless Fall Barley	2 00
F. M. Whipps, Byhalia, O.	2d best peck Beardless Fall Barley	1 00

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
F. M. Whipps, Byhalia, O.	Best peck Spring Barley	$2 00
J. L. Keckley, Marysville, O.	2d best peck Spring Barley	1 00
J. L. Keckley, Marysville, O.	Best peck Silver Hull Buckwheat	1 50
Albert Pearce, North Ridgeville, O.	2d best peck Silver Hull Buckwheat	75
Albert Pearce, North Ridgeville, O.	Best peck Japanese Buckwheat	1 50
J. L. Keckley, Marysville, O.	2d best peck Japanese Buckwheat	75
Albert Pearce, North Ridgeville, O.	Best peck Spelt	1 50
F. M. Whipps, Byhalia, O.	2d best peck Spelt	75
J. L. Keckley, Marysville, O.	Best peck Common Flax Seed	2 00
F. M. Whipps, Byhalia, O.	2d best Peck Common Flax Seed	1 00
J. L. Keckley, Marysville, O.	Best 2 quarts Canada Field Peas.	1 50
Albert Pearce, North Ridgeville, O.	2d best 2 quarts Canada Field Peas	75
F. M. Whipps, Byhalia, O.	Best 2 qts. Marrow Fat Field Peas.	1 50
Albert Pearce, North Ridgeville, O.	2d best 2 qts. Marrow Fat Field Peas	75
Grass Seeds.		
F. M. Whipps, Byhalia, O.	Best peck Timothy Seed	2 00
J. L. Keckley, Marysville, O.	2d best peck Timothy Seed	1 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best peck Kentucky Blue Grass	2 00
F. M. Whipps, Byhalia, O.	2d best peck Kentucky Blue Grass	1 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best peck Orchard Grass Seed	2 00
Albert Pearce, North Ridgeville, O.	2d best peck Orchard Grass Seed	1 00
J. L. Keckley, Marysville, O.	Best peck Red Top Grass Seed	2 00
I. B. Keckley, Marysville, O.	2d best peck Red Top Grass Seed	1 00
F. M. Whipps, Byhalia, O.	Best peck German Millet	2 00
J. L. Keckley, Marysville, O.	2d best peck German Millet	1 00
I. B. Keckley, Marysville, O.	Best peck Hungarian Grass	2 00
J. L. Keckley, Marysville, O.	2d best peck Hungarian Grass	1 00
Clover Seeds.		
F. M. Whipps, Byhalia, O.	Best peck Mammoth Red	2 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best peck Mammoth Red	1 00
F. M. Whipps, Byhalia, O.	Best peck Common Red	2 00
Albert Pearce, North Ridgeville, O.	Best peck Crimson	2 00
Displays.		
J. L. Keckley, Marysville, O.	Best display of grain in straw and threshed	8 00
Albert Pearce, North Ridgeville, O.	2d best display of grain in straw and threshed	4 00
G. B. Gregg, Marysville, O.	Best display of grasses, including clover and sedges	5 00
J. L. Keckley, Marysville, O.	2d best display of grasses, including clover and sedges	8 00
Tobacco.		
D. F. Corwin, Springboro, O.	Best four hands Ohio Seed Leaf	2 00
G. W. Wildman, Springfield, O.	2d best four hands Ohio Seed Leaf	1 00
D. F. Corwin, Springboro, O.	Best four hands White Burley	2 00
D. F. Corwin, Springboro, O.	Best four hands Little Dutch	2 00
G. W. Wildman, Springfield, O.	2d best four hands Little Dutch	1 00
D. F. Corwin, Springboro, O.	Best four hands Zimmer's Spanish	2 00
G. W. Wildman, Springfield, O.	2d best four hands Zimmer's Spanish	1 00
Corn.		
J. L. Keckley, Marysville, O.	Best twelve ears yellow field corn	3 00
Albert Pearce, North Ridgeville, O.	2d best twelve ears yellow field corn	2 00
J. L. Keckley, Marysville, O.	Best twelve ears white field corn	3 00
I. B. Keckley, Marysville, O.	2d best twelve ears white field corn.	2 00
J. L. Keckley, Marysville, O.	Best twelve ears yellow flint corn	2 00
I. B. Keckley, Marysville, O.	2d best twelve ears yellow flint corn	1 00
J. L. Keckley, Marysville, O.	Best twelve ears white flint corn	2 00
I. B. Keckley, Marysville, O.	2d best twelve ears white flint corn.	1 00
Albert Pearce, North Ridgeville, O.	Best twelve ears white pop corn	2 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best twelve ears white pop corn	1 00
J. L. Keckley, Marysville, O.	Best twelve ears red pop corn	2 00
Albert Pearce, North Ridgeville, O.	2d best twelve ears red pop corn	1 00
Albert Pearce, North Ridgeville, O.	Best twelve ears golden pop corn	2 00
F. M. Whipps, Byhalia, O.	2d best twelve ears golden pop corn.	1 00

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
Displays.		
I. B. Keckley, Marysville, O.	Best display of white field corn	$8 00
J. L. Keckley, Marysville, O.	2d best display of white field corn	4 00
J. L. Keckley, Marysville, O.	Best display of yellow field corn	8 00
G. B. Gregg, Marysville, O.	2d best display of yellow field corn.	4 00
J. L. Keckley, Marysville, O.	Best display and variety of pop corn	3 00
I. B. Keckley, Marysville, O.	2d best display and variety of pop corn	2 00
Maurice Kent, Newark, O.	Best display and variety of corn on stalk	6 00
J. L. Keckley, Marysville, O.	2d best display and variety of corn stalk	3 00
F. M. Whipps, Byhalia, O.	Best twenty lbs. of broom corn	2 00
Frank C. Reinkens, Columbus, O.	2d best twenty lbs. of broom corn	1 00
Potatoes and Roots.		
F. M. Whipps, Byhalia, O.	Best peck of Banner	1 50
Maurice Kent, Newark, O.	2d best peck of Banner	75
Maurice Kent, Newark, O.	Best peck of Beauty of Hebron	1 50
Powell & Kent, Newark, O.	2d best peck of Beauty of Hebron	75
Hilas Craig, Groveport, O.	Best peck of Bliss' Triumph	1 50
Maurice Kent, Newark, O.	2d best peck of Bliss' Triumph	75
Powell & Kent, Newark, O.	Best peck of Burpee's Early	1 50
Maurice Kent, Newark, O.	2d best peck of Burpee's Early	75
Maurice Kent, Newark, O.	Best peck of Bovee	1 50
Powell & Kent, Newark, O.	2d best peck of Bovee	75
Powell & Kent, Newark, O.	Best peck of Carman No. 3	1 50
Maurice Kent, Newark, O.	2d best peck of Carman No. 3	75
J. L. Keckley, Marysville, O.	Best peck of Early Ohio	1 50
Powell & Kent, Newark, O.	2d best peck of Early Ohio	75
J. L. Keckley, Marysville, O.	Best peck of Early Norther	1 50
Maurice Kent, Newark, O.	2d best peck of Early Norther	75
J. L. Keckley, Marysville, O.	Best peck Early Pride	1 50
Maurice Kent, Newark, O.	2d best peck Early Pride	75
J. L. Keckley, Marysville, O.	Best peck of Early Rose	1 50
Powell & Kent, Newark, O.	2d best peck of Early Rose	75
J. L. Keckley, Marysville, O.	Best peck of Early Puritan	1 50
Powell & Kent, Newark, O.	2d best peck of Early Puritan	75
Maurice Kent, Newark, O.	Best peck of Early Trumbull	1 50
Powell & Kent, Newark, O.	2d best peck of Early Trumbull	75
F. M. Whipps, Byhalia, O.	Best peck Enormous	1 50
Maurice Kent, Newark, O.	2d best peck Enormous	75
Maurice Kent, Newark, O.	Best peck of Early Thoroughbred	1 50
F. M. Whipps, Byhalia, O.	2d best peck of Early Thoroughbred	75
J. L. Keckley, Marysville, O.	Best peck of Early Six Weeks	1 50
Hilas Craig, Groveport, O.	2d best peck of Early Six Weeks	75
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best peck of Early Michigan	1 50
Powell & Kent, Newark, O.	2d best peck of Early Michigan	75
Powell & Kent, Newark, O.	Best peck of Green Mountain	1 50
Maurice Kent, Newark, O.	2d best peck of Green Mountain	75
Maurice Kent, Newark, O.	Best peck of Irish Cobbler	1 50
Alex. Wilson, Newark, O.	2d best peck of Irish Cobbler	75
Powell & Kent, Newark, O.	Best peck Maggie Murphy	1 50
Alex. Wilson, Newark, O.	2d best peck Maggie Murphy	75
Powell & Kent, Newark, O.	Best peck of Livingston	1 50
Maurice Kent, Newark, O.	2d best peck of Livingston	75
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best peck of Pingree	1 50
Maurice Kent, Newark, O.	2d best peck of Pingree	75
Maurice Kent, Newark, O.	Best peck of New Queen	1 50
J. L. Keckley, Marysville, O.	2d best peck of New Queen	75
Hilas Craig, Groveport, O.	Best peck of Red Seneca Beauty	1 50
Alex. Wilson, Newark, O.	2d best peck of Red Seneca Beauty	75
Maurice Kent, Newark, O.	Best peck of Rural New Yorker No 2	1 50
F. M. Whipps, Byhalia, O.	2d best peck of Rural New Yorker No 2	75
F. M. Whipps, Byhalia, O.	Best peck of Sir Walter Raleigh	1 50
Powell & Kent, Newark, O.	2d best peck of Sir Walter Raleigh.	75
Powell & Kent, Newark, O.	Best peck of Uncle Sam	1 50
Alex. Wilson, Newark, O.	2d best peck of Uncle Sam	75
Powell & Kent, Newark, O.	Best peck of Vaughan	1 50
Alex. Wilson, Newark, O.	2d best peck of Vaughan	75
Alex. Wilson, Newark, O.	Best peck of White Mountain	1 50
J. L. Keckley, Marysville, O.	2d best peck of White Mountain	75
Powell & Kent, Newark, O.	Best peck of White Ohio	1 50
Maurice Kent, Newark, O.	2d best peck of White Ohio	75

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
Alex. Wilson, Newark, O.	Best peck of Whiton's White Mammoth	$1 50
Powell & Kent, Newark, O.	2d best peck of Whiton's White Mammoth	75
Alex. Wilson, Newark, O.	Best peck of World's Fair	1 50
Maurice Kent, Newark, O.	2d best peck of World's Fair	75
Maurice Kent, Newark, O.	Best display of twenty-five varieties of Irish potatoes	15 00
Alex. Wilson, Newark, O.	2d best display of twenty-five varieties of Irish potatoes	8 00
Hilas Craig, Groveport, O.	Best peck yellow sweet potatoes	1 50
Maurice Kent, Newark, O.	2d best peck yellow sweet potatoes	75
Powell & Kent, Newark, O.	Best peck red sweet potatoes	1 50
Maurice Kent, Newark, O.	2d best peck red sweet potatoes	75
Maurice Kent, Newark, O.	Best peck white sweet potatoes	1 50
Powell & Kent, Newark, O.	2d best peck white sweet potatoes	75
Maurice Kent, Newark, O.	Best peck red yams	1 50
Powell & Kent, Newark, O.	2d best peck red yams	75
Maurice Kent, Newark, O.	Best peck white yams	1 50
Hilas Craig, Groveport, O.	2d best pack of white yams	75
Maurice Kent, Newark, O.	Best display of sweet potatoes and yams	4 00
Powell & Kent, Newark, O.	2d best display of sweet potatoes and yams	2 00
Maurice Kent, Newark, O.	Best twelve carrots, long orange	1 50
Powell & Kent, Newark, O.	2d best twelve carrots, long orange	75
Maurice Kent, Newark, O.	Best twelve carrots, Danver's	1 50
Powell & Kent, Newark, O.	2d best twelve carrots, Danver's	75
Maurice Kent, Newark, O.	Best twelve carrots, Oxheart	1 50
Powell & Kent, Newark, O.	2d best twelve carrots, Oxheart	75
Powell & Kent, Newark, O.	Best twelve carrots, White Belgian	1 50
Maurice Kent, Newark, O.	2d best twelve carrots, White Belgian	75
G. W. Wildman, Springfield, O.	Best display of carrots	3 00
Powell & Kent, Newark, O.	2d best display of carrots	2 00
Maurice Kent, Newark, O.	Best twelve parsnips	1 50
Powell & Kent, Newark, O.	2d best twelve parsnips	75
Maurice Kent, Newark, O.	Best twelve roots, Salsify	1 50
Powell & Kent, Newark, O.	2d best twelve roots, Salsify	75
Maurice Kent, Newark, O.	Best six beets, Eclipse	1 50
Alex. Wilson, Newark, O.	2d best six beets, Eclipse	75
Powell & Kent, Newark, O.	Best six beets, Columbian	1 50
Alex. Wilson, Newark, O.	2d best six beets, Columbian	75
J. L. Keckley, Marysville, O.	Best six beets, Egyptian	1 50
Maurice Kent, Newark, O.	2d best six beets, Egyptian	75
Maurice Kent, Newark, O.	Best six beets, Dark Blood Turnip	1 50
Powell & Kent, Newark, O.	2d best six beets, Dark Blood Turnip	75
Alex. Wilson, Newark, O.	Best six beets, Long Blood	1 50
Albert Pearce, North Ridgeville, O.	2d best six beets, Long Blood	75
Powell & Kent, Newark, O.	Best two varieties Sugar beets	1 50
Maurice Kent, Newark, O.	2d best two varieties Sugar beets	75
Powell & Kent, Newark, O.	Best three beets, long red Mangel Wurzel	1 50
Maurice Kent, Newark, O.	2d best three beets, long red Mangel Wurzel	75
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best three beets, long yellow Mangel Wurzel	1 50
Maurice Kent, Newark, O.	2d best three beets, long yellow Mangel Wurzel	75
Powell & Kent, Newark, O.	Best three beets, Golden Tankard	1 50
Maurice Kent, Newark, O.	2d best three beets, Golden Tankard.	75
Maurice Kent, Newark, O.	Best three beets, Red Globe	1 50
Powell & Kent, Newark, O.	2d best three beets, Red Globe	75
F. M. Whipps, Byhalia, O.	Best three beets, Yellow Globe	1 50
Powell & Kent, Newark, O.	2d best three beets, Yellow Globe	75
Maurice Kent, Newark, O.	Best display of beets, twelve varieties	4 00
Alex. Wilson, Newark, O.	2d best display of beets, 12 varieties	2 00
Maurice Kent, Newark, O.	Best display beets and turnips	4 00
G. W. Wildman, Springfield, O.	2d best display beets and turnips	2 00
Maurice Kent, Newark, O.	Best six purple Kohlrabi	1 50
G. W. Wildman, Springfield, O.	2d best six purple Kohlrabi	75
G. W. Wildman, Springfield, O.	Best six white Kohlrabi	1 50
Maurice Kent, Newark, O.	2d best six white Kohlrabi	75
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best six Rutabagas	1 50
Chester C. Leavitt, Mechanicsburg, O.	2d best six Rutabagas	75
Alex. Wilson, Newark, O.	Best peck turnips, Purple Top	1 50
Maurice Kent, Newark, O.	2d best peck turnips, Purple Top	75
G. W. Wildman, Springfield, O.	Best peck turnips, White Top	1 50
Powell & Kent, Newark, O.	2d best peck turnips, White Top	75

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
J. L. Keckley, Marysville, O.	Best peck onions, Red Globe	$1 50
Maurice Kent, Newark, O.	2d best peck onions, Red Globe	75
J. L. Keckley, Marysville, O.	Best peck onions, White Globe	1 50
G. B. Gregg, Marysville, O.	2d best peck onions, White Globe	75
J. L. Keckley, Marysville, O.	Best peck onions, Yellow Globe Danver's	1 50
F. M. Whipps, Byhalia, O.	2d best peck onions, Yellow Globe Danver's	75
J. L. Keckley, Marysville, O.	Best peck onions, Red Wethersfield	1 50
F. M. Whipps, Byhalia, O.	2d best peck onions, Red Wethersfield	75
Maurice Kent, Newark, O.	Best peck onions, Red Rocca	1 50
Powell & Kent, Newark, O.	2d best peck onions, Red Rocca	75
F. M. Whipps, Byhalia, O.	Best peck onions, Prizetaker	1 50
Powell & Kent, Newark, O.	2d best peck onions, Prizetaker	75
F. M. Whipps, Byhalia, O.	Best peck onions, Potato	1 50
Powell & Kent, Newark, O.	2d best peck onions, Potato	75
Powell & Kent, Newark, O.	Best display of onions, ten varieties.	5 00
J. L. Keckley, Marysville, O.	2d best display of onions, ten varieties	3 00
Vegetables.		
Alex. Wilson, Newark, O.	Best peck Acme tomatoes	1 50
Maurice Kent, Newark, O.	2d best Acme tomatoes	75
Alex. Wilson, Newark, O.	Best peck Aristocrat tomatoes	1 50
Powell & Kent, Newark, O.	2d best peck Aristocrat tomatoes	75
Alex. Wilson, Newark, O.	Best peck Buckeye State tomatoes	1 50
Maurice Kent, Newark, O.	2d best peck Buckeye State tomatoes	75
Alex. Wilson, Newark, O.	Best peck Beauty tomatoes	1 50
Maurice Kent, Newark, O.	2d best peck Beauty tomatoes	75
Powell & Kent, Newark, O.	Best peck Dwarf Champion tomatoes	1 50
Maurice Kent, Newark, O.	2d best peck Dwarf Champion tomatoes	75
Powell & Kent, Newark, O.	Best peck Favorite tomatoes	1 50
Maurice Kent, Newark, O.	2d best peck Favorite tomatoes	75
Alex. Wilson, Newark, O.	Best peck Golden Queen tomatoes	1 50
Powell & Kent, Newark, O.	2d best peck Golden Queen tomatoes	75
Maurice Kent, Newark, O.	Best peck Honor Bright tomatoes	1 50
Powell & Kent, Newark, O.	2d best peck Honor Bright tomatoes	75
Maurice Kent, Newark, O.	Best peck Imperial Royal Red tomatoes	1 50
Powell & Kent, Newark, O.	2d best peck Imperial Royal Red tomatoes	75
Maurice Kent, Newark, O.	Best peck Perfection tomatoes	1 50
Powell & Kent, Newark, O.	2d best peck Perfection tomatoes	75
Frank C. McVay, Columbus, O.	Best peck Ponderosa tomatoes	1 50
Maurice Kent, Newark, O.	2d best peck Ponderosa tomatoes	75
Maurice Kent, Newark, O.	Best peck Stone tomatoes	1 50
Powell & Kent, Newark, O.	2d best peck Stone tomatoes	75
Powell & Kent, Newark, O.	Best peck Sparks Earliest tomatoes	1 50
Maurice Kent, Newark, O.	2d best peck Sparks Earliest tomatoes	75
Alex. Wilson, Newark, O.	Best peck Magnus tomatoes	1 50
Powell & Kent, Newark, O.	2d best peck Magnus tomatoes	75
Alex. Wilson, Newark, O.	Best peck Enormous tomatoes	1 50
Maurice Kent, Newark, O.	2d best peck Enormous tomatoes	75
Alex. Wilson, Newark, O.	Best display of tomatoes, ten varieties	5 00
Powell & Kent, Newark, O.	2d best display of tomatoes, ten varieties	3 00
Powell & Kent, Newark, O.	Best 3 heads all seasons cabbage	1 50
G .W. Wildman, Springfield, O.	2d best 3 heads all seasons cabbage.	75
Maurice Kent, Newark, O.	Best 3 heads autumn King cabbage.	1 50
Alex. Wilson, Newark, O.	2d best 3 heads autumn King cabbage	75
Maurice Kent, Newark, O.	Best 3 heads Surehead cabbage	1 50
Alex. Wilson, Newark, O.	2d best 3 heads Surehead cabbage	75
Maurice Kent, Newark, O.	Best 3 heads Flat Dutch cabbage	1 50
Powell & Kent, Newark, O.	2d best 3 heads Flat Dutch cabbage.	75
Alex. Wilson, Newark, O.	Best 3 heads Drumhead cabbage	1 50
Maurice Kent, Newark, O.	2d best 3 heads Drumhead cabbage.	75
Powell & Kent, Newark, O.	Best 3 heads Red Dutch cabbage	1 50
Maurice Kent, Newark, O.	2d best 3 heads Red Dutch cababge	75
Powell & Kent, Newark, O.	Best 3 heads Winninstadt cabbage	1 50
Alex. Wilson, Newark, O.	2d best 3 heads Winninstadt cabbage	75
Maurice Kent, Newark, O.	Best 3 heads Early Summer cabbage	1 50
Alex. Wilson, Newark, O.	Heaviest head of cabbage	1 50
Maurice Kent, Newark, O.	2d heaviest head of cabbage	75

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
G. W. Whipps, Marion, O.	Best 3 heads Early Snowball cauliflower	$1 50
G. W. Wildman, Springfield, O.	2d best 3 heads Early Snowball cauliflower	75
G. W. Wildman, Springfield, O.	Best 3 heads Dwarf Erfurt cauliflower	1 50
Alex. Wilson, Newark, O.	2d best 3 heads Dwarf Erfurt cauliflower	75
G. W. Wildman, Springfield, O.	Best 6 stalks White Plume celery	1 50
Maurice Kent, Newark, O.	2d best 6 stalks White Plume celery	75
Maurice Kent, Newark, O.	Best 6 stalks Golden Self-Blanching celery	1 50
Maurice Kent, Newark, O.	Best 6 stalks Giant Pascal celery	1 50
Alex. Wilson, Newark, O.	Best 12 largest peppers	1 50
Maurice Kent, Newark, O.	2d twelve largest peppers	75
Maurice Kent, Newark, O.	Best 3 Boston Marrow squashes	1 50
Powell & Kent, Newark, O.	2d best 3 Boston Marrow Squashes	75
Powell & Kent, Newark, O.	Best 3 Cushaw squashes	1 50
Hilas Craig, Groveport, O.	2d best 3 Cushaw sqaushes	75
Albert Pearce, North Ridgeville, O.	Best 3 Essex Hybrid squashes	1 50
Maurice Kent, Newark, O.	2d best 3 Essex Hybrid squashes	75
Maurice Kent, Newark, O.	Best 3 Marblehead squashes	1 50
Powell & Kent, Newark, O.	2d best 3 Marblehead squashes	75
G. W. Whipps, Marion, O.	Best 3 Hubbard squashes	1 50
F. M. Whipps, Byhalia, O.	2d best 3 Hubbard squashes	75
Maurice Kent, Newark, O.	Best red Hubbard squashes	1 50
Powell & Kent Newark, O.	2d best red Hubbard squashes	75
G. W. Wildman, Springfield, O.	Best 3 yellow Crookneck squashes	1 50
Maurice Kent, Newark, O.	2d best 3 yellow Crookneck squashes	75
Powell & Kent, Newark, O.	Best 3 Pike's Peak squashes	1 50
Maurice Kent, Newark, O	2d best 3 Pike's Peak squashes	75
G. W. Wildman, Springfield, O.	Best 3 Mammoth Chili squashes	1 50
J. L. Keckley, Marysville, O.	2d best 3 Mammoth Chili squashes	75
Powell & Kent, Newark, O.	Best 3 yellow Scallop squashes	1 50
Maurice Kent, Newark, O.	2d best 3 yellow Scallop squashes	75
G. W. Wildman, Springfield, O.	Heaviest squash	2 00
Maurice Kent, Newark, O.	2d heaviest squash	1 00
Maurice Kent, Newark, O.	Best display of squashes	5 00
G. W. Wildman, Springfield, O.	2d best display of squashes	3 00
F. M. Whipps, Byhalia, O.	Best 3 yellow field pumpkins	2 00
G. W. Wildman, Springfield, O.	2d best 3 yellow field pumpkins	1 00
Hilas Craig, Groveport, O.	Best 3 sweet or pie pumpkins	2 00
Maurice Kent, Newark, O.	2d best 3 sweet or pie pumpkins	1 00
F. M. Whipps, Byhalia, O.	Heaviest pumpkin	2 00
Powell & Kent, Newark, O.	2d heaviest pumpkin	1 00
Maurice Kent, Newark, O.	Best 3 Black Diamond watermelons	2 00
Powell & Kent, Newark, O.	2d best 3 Black Diamond watermelons	1 00
Hilas Craig, Groveport, O.	Best 3 Kolb's Gem watermelons	2 00
Powell & Kent, Newark, O.	2d best 3 Kolb's Gem watermelons	1 00
Maurice Kent, Newark, O.	Best 3 Ice Cream watermelons	2 00
Alex. Wilson, Newark, O.	2d best 3 Ice Cream watermelons	1 00
Hilas Craig, Groveport, O.	Best 3 Sweetheart watermelons	2 00
Maurice Kent, Newark, O.	2d best Sweetheart watermelons	1 00
Maurice Kent, Newark, O.	Best 3 Nabob watermelons	2 00
Maurice Kent, Newark, O.	Best 3 Phinney's Early watermelons	2 00
Alex. Wilson, Newark, O.	2d best 3 Phinney's Early watermelons	1 00
Maurice Kent, Newark, O.	Best 3 Hoosier King watermelons	2 00
Alex. Wilson, Newark, O.	2d best 3 Hoosier King watermelons	1 00
Maurice Kent, Newark, O.	Best 3 Rattlesnake watermelons	2 00
F. M. Whipps, Byhalia, O.	2d best 3 Rattlesnake watermelons	1 00
Maurice Kent, Newark, O.	Best 3 Kleckley's Sweet watermelons	2 00
Powell & Kent, Newark, O.	2d best 3 Kleckley's Sweet watermelons	1 00
Powell & Kent, Newark, O.	Best 3 Boss watermelons	2 00
Maurice Kent, Newark, O.	2d best 3 Boss watermelons	1 00
Alex. Wilson, Newark, O.	Best 3 Dark Icing watermelons	2 00
Maurice Kent, Newark, O.	2d best 3 Dark Icing watermelons	1 00
Alex. Wilson, Newark, O.	Best 3 citron watermelons	2 00
F. M. Whipps, Byhalia, O.	Heaviest watermelons	2 00
Maurice Kent, Newark, O.	2d heaviest watermelons	1 00
Maurice Kent, Newark, O.	Best display of watermelons	5 00
Powell & Kent, Newark, O.	2d best display of watermelons	3 00
Powell & Kent, Newark, O.	Best 3 Osage muskmelons	1 50
Alex. Wilson, Newark, O.	2d best 3 Osage muskmelons	75

FARM PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
Maurice Kent, Newark, O.	Best 3 Montreal muskmelons	$1 50
Powell & Kent, Newark, O.	2d best 3 Montreal muskmelons	75
Maurice Kent, Newark, O.	Best 3 Rose Gem muskmelons	1 50
Powell & Kent, Newark, O.	2d best 3 Rose Gem muskmelons	75
Maurice Kent, Newark, O.	Best 3 Bay View muskmelons	1 50
Powell & Kent, Newark, O.	2d best 3 Bay View muskmelons	75
Powell & Kent, Newark, O.	Best 3 Grand Rapids muskmelons	1 50
Maurice Kent, Newark, O.	2d best 3 Grand Rapids muskmelons	75
Maurice Kent, Newark, O.	Best 3 Tip Top muskmelons	1 50
Alex. Wilson, Newark, O.	2d best 3 Tip Top muskmelons	75
Alex. Wilson, Newark, O.	Best 3 Hackensack muskmelons	1 50
Maurice Kent, Newark, O.	2d best 3 Hackensack muskmelons.	75
Maurice Kent, Newark, O.	Best 3 Emerald Gem muskmelons	1 50
Powell & Kent, Newark, O.	2d best 3 Emerald Gem muskmelons.	75
Powell & Kent, Newark, O.	Best display of muskmelons	5 00
Maurice Kent, Newark, O.	2d best display of muskmelons	3 00
Maurice Kent, Newark, O.	Best twelve cucumbers	1 00
J. L. Keckley, Marysville, O.	2d best twelve cucumbers	50
Powell & Kent, Newark, O.	Best 3 purple egg plant fruits	1 00
Maurice Kent, Newark, O.	2d best 3 purple egg plant fruits	50
F. M. Whipps, Byhalia, O.	Best twelve ears early sweet corn, crop 1902	1 00
Albert Pearce, North Ridgeville, O.	Best twelve ears late sweet corn, crop 1902	1 00
G. W. Wildman, Springfield, O.	2d best twelve ears late sweet corn, crop 1902	50
Hilas Craig, Groveport, O.	Best two quarts Lima beans	1 00
F. M. Whipps, Byhalia, O.	2d best two quarts Lima beans	50
J. L. Keckley, Marysville, O.	Best two quarts Marrowfat beans	1 00
Albert Pearce, North Ridgeville, O.	2d best two quarts Marrowfat beans.	50
J. L. Keckley, Marysville, O.	Best two quarts Navy beans	1 00
I. B. Keckley, Marysville, O.	2d best two quarts Navy beans	50
J. L. Keckley, Marysville, O.	Best two quarts Golden Wax beans	1 00
Albert Pearce, North Ridgeville, O.	2d best two quarts Golden Wax beans	50
J. L. Keckley, Marysville, O.	Best two quarts white Kidney beans	1 00
I. B. Keckley, Marysville, O.	2d best two quart white Kidney beans	50
Albert Pearce, North Ridgeville, O.	Best two quarts red Kidney beans	1 00
J. L. Keckley, Marysville, O.	2d best two quarts red Kidney beans	50
J. L. Keckley, Marysville, O.	Best display of beans, twenty varieties	4 00
Chester C. Leavitt, Mechanicsburg, O.	2d best display of beans, twenty varieties	2 00
G. W. Wildman, Springfield, O.	Best six stalks of rhubarb	1 00
Alex. Wilson, Newark, O.	2d best six stalks of rhubarb	50
G. W. Wildman, Springfield, O.	Best twelve radishes, long white	1 00
Alex. Wilson, Newark, O.	2d best twelve radishes, long white.	50
G. W. Wildman, Springfield, O.	Best twelve radishes, long red	1 00
Alex. Wilson, Newark, O.	2d best twelve radishes, long red	50
Alex. Wilson, Newark, O.	Best display of vegetables	20 00
Maurice Kent, Newark, O.	2d best display of vegetables	12 00
Powell & Kent, Newark, O.	3d best display of vegetables	8 00
County Exhibits.		
J. L. Keckley, Marysville, O. (Union Co.)	Best representative exhibit of farm products	125 00
Powell & Kent, Newark, O. (Licking Co.)	2d best representative exhibit of farm products	110 00
G. W. Wildman, Springfield, O. (Clark Co.)	3d best representative exhibit of farm products	80 00
G. W. Whipps, Marion, O. (Marion Co.)	4th best representative exhibit of farm products	60 00
M. J. & C. E. Leavitt, Mechanicsburg, O. (Champaign Co.)	5th best representative exhibit of farm products	30 00

The Armour Fertilizer Works added to the above as follows:

To first award	$40 00
To second award	25 00
To third award	20 00
To fourth award	15 00

FARM PRODUCTS—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amt.
Home Dairy Butter.		
G. W. Purdum, Hilliard, O.................	Best ten pound package...............	$5 00
G. W. Purdum, Hilliard, O.................	Best five single pound prints.........	5 00
Draper Vanfossen, Pennsville, O...........	2d best five single pound prints.......	3 00
Creamery Butter.		
The Galena Creamery Co., Galena, O....	Best fifty pound tub...................	10 00
E. G. Garber, Bellville, O..................	2d best fifty pound tub................	5 00
The Galena Creamery Co., Galena, O....	Best ten single prints..................	10 00
Sunbury Creamery Co., Sunbury, O........	2d best ten single prints..............	5 00
A. T. Sheldon, Columbus, O...............	Best display of butter..................	Medal
Cheese.		
B. B. Herrick, Wellington, O...............	Best Flat cheese, twenty-five pounds	8 00
A. E. Helmer, Evans Mills, N. Y.........	2d best Flat cheese, twenty-five pounds	4 00
A. E. Helmer, Evans Mills, N. Y.........	Best Chedder cheese, 50 pounds.....	8 00
A. E. Helmer, Evans Mills, N. Y.........	Best Young American cheese	5 00
B. B. Herrick, Wellington, O.............	Best Edam cheese, three pounds....	5 00
Bees and Honey.		
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best display of comb honey.........	10 00
Mrs. Jessie Goodrich, Worthington, O...	2d best display of comb honey......	5 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best case, 24 sections, white clover comb honey	3 00
Mrs. Jessie Goodrich, Worthington, O...	2d best case, 24 sections, white clover comb honey	2 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best case, 24 sections, basswood comb honey	3 00
Mrs. Jessie Goodrich, Worthington, O...	2d best case, 24 sections, basswood comb honey	2 00
Mrs. Jessie Goodrich, Worthington, O...	Best case, 24 sections, comb honey from fall flowers	3 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best case, 24 sections, comb honey from fall flowers	2 00
Mrs. Jessie Goodrich, Worthington, O...	Best 12 lbs. of extracted honey......	3 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best 12 lbs. of extracted honey..	2 00
Mrs. Jessie Goodrich, Worthington, O...	Best display of extracted honey.....	10 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best display of extracted honey.	5 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best display of candied honey......	5 00
Mrs. Jessie Goodrich, Worthington, O...	2d best display of candied honey...	3 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best display of beeswax.............	3 00
Chester C. Leavitt, Mechanicsburg, O....	2d best display of beeswax...........	2 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best nucleus of Italian bees	3 00
Chester C. Leavitt, Mechanicsburg, O....	2d best nucleus of Italian bees........	2 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best nucleus of Carniolan bees	3 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	Best display of comb foundation ...	2 00
Chester C. Leavitt, Mechanicsburg, O....	2d best display of comb foundation...	1 00
Mrs. Jessie Goodrich, Worthington, O...	Best, largest and finest display of honey	15 00
M. J. & C. E. Leavitt, Mechanicsburg, O.	2d best, largest and finest display of honey	8 00
Maple Products.		
G. A. Bartholomew, Huntsburg, O.......	Best gallon of maple syrup...........	3 00
Lyman Strong, Huntsburg, O..............	2d best gallon of maple syrup.......	2 00
G. A. Bartholomew, Huntsburg, O.......	Best three bricks of maple sugar...	3 00
Lyman Strong, Huntsburg, O..............	2d best three bricks of maple sugar	2 00
G. A. Bartholomew, Huntsburg, O.......	Best design in maple sugar	2 00
Lyman Strong, Huntsburg, O............	2d best design in maple sugar	1 00
Lyman Strong, Huntsburg, O............	Best five pounds grained maple sugar	3 00
Leavitt & Hodge, Mechanicsburg, O.....	2d best five pounds grained maple sugar	2 00
Lyman Strong, Huntsburg, O..............	Best display of maple cream.........	3 00
G. A. Bartholomew, Huntsburg, O........	2d best display of maple cream.....	2 00
G. A. Bartholomew, Huntsburg, O........	Largest, best and most attractive display of maple products, by county	15 00
Leavitt & Hodge, Mechanicsburg, O.....	2d largest, best and most attractive display of maple products, by county	10 00
Albert Pearce, North Ridgeville, O......	Best gallon of sorghum syrup.......	2 00

SEVENTH DEPARTMENT—FRUITS.

Wm. Miller, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amt.
Summer, Fall and Winter Apples.		
E. G. Cox, Rockwood, O	Best three varieties of summer for market	$3 00
Joseph Perrine, Lebanon, O	2d best three varieties of summer for market	1 00
Harry Bookwalter, Hallsville, O	Best three varieties of fall for market	3 00
U. T. Cox, Rockwood, O	2d best three varieties of fall for market	1 00
E. G. Cox, Rockwood, O	Best six varieties of winter for market	5 00
W. H. West, Chillicothe, O	2d best six varieties of winter for market	3 00
U. T. Cox, Rockwood, O	Best collection of twelve varieties summer, fall and winter for market	8 00
E. G. Cox, Rockwood, O	2d best collection of twelve varieties summer, fall and winter, for market	5 00
Emmett Rhoads, St. Paris, O	Best one variety of summer dessert	2 00
W. H. West, Chillicothe, O	2d best one variety of summer dessert	1 00
U. T. Cox, Rockwood, O	Best one variety of fall dessert	2 00
Henry Bieber, Delaware, O	2d best one variety of fall dessert	1 00
W. H. West, Chillicothe, O	Best one variety of winter dessert	2 00
U. T. Cox, Rockwood, O	2d best one variety of winter dessert	1 00
W. H. West, Chillicothe, O	Best collection of six varieties summer, fall and winter for dessert and culinary	6 00
U. T. Cox, Rockwood, O	2d best collection of six varieties summer, fall and winter for dessert and culinary	3 00
Moses A. Hagler, Xenia, O	Best one variety of fall, size and beauty to rule	2 00
Harry Bookwalter, Hallsville, O	2d best one variety of fall, size and beauty to rule	1 00
U. T. Cox, Rockwood, O	Best one variety of winter, size and beauty to rule	2 00
E. G. Cox, Rockwood, O	2d best one variety of winter, size and beauty to rule	1 00
E. G. Cox, Rockwood, O	Best collection of six varieties, summer, fall and winter, size and beauty to rule	6 00
U. T. Cox, Rockwood, O	2d best collection of six varieties summer, fall and winter, size and beauty to rule	3 00
U. T. Cox, Rockwood, O	Best display of twenty-five varieties summer, fall and winter, dessert, culinary and market qualities to be considered	20 00
W. W. Farnsworth, Waterville, O	2d best display of twenty-five varieties summer, fall and winter, dessert, culinary and market qualities ot be considered	10 00
Plate Apples—Summer and Fall.		
E. G. Stockman, Prospect, O	Best plate Alexander	1 50
W. W. Farnsworth, Waterville, O	2d best plate Alexander	75
W. H. West, Chillicothe, O	Best plate Benoni	1 50
M. I. Shively, Chillicothe, O	2d best plate Benoni	75
W. W. Farnsworth, Waterville, O	Best plate Cayuga Red Streak	1 50
W. H. West, Chillicothe, O	2d best plate Cayuga Red Streak	75
W. W. Farnsworth, Waterville, O	Best plate Chenango Strawberry	1 50
U. T. Cox, Rockwood, O	2d best plate Chenango Strawberry	75
Moses A. Hagler, Xenia, O	Best plate Duchess of Oldenburg	1 50
U. T. Cox, Rockwood, O	2d best plate Dutchess of Oldenburg	75
Harry Bookwalter, Hallsville, O	Best plate Fall Pippin	1 50
U. T. Cox, Rockwood, O	2d best plate Fall Pippin	75
D. F. Corwin, Springboro, O	Best plate Fall Wine	1 50
W. H. West, Chillicothe, O	2d best plate Fall Wine	75
W. W. Farnsworth, Waterville, O	Best plate Gravenstein	1 50
M. I. Shively, Chillicothe, O	2d best plate Gravenstein	75
W. W. Farnsworth, Waterville, O	Best plate Jeffries	1 50

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
E. G. Stockman, Prospect, O.	Best plate Lowell	$1 50
U. T. Cox, Rockwood, O.	2d best plate Lowell	75
U. T. Cox, Rockwood, O.	Best plate Maiden's Blush	1 50
Harry Bookwalter, Hallsville, O.	2d best plate Maiden's Blush	75
T. S. Johnson, Port Clinton, O.	Best plate Ohio Nonpareil	1 50
W. W. Farnsworth, Waterville, O.	2d best plate Ohio Nonpareil	75
W. H. West, Chillicothe, O.	Best plate Porter	1 50
E. G. Stockman, Prospect, O.	2d best plate Porter	75
R. G. Johnson, Gypsum, O.	Best plate Red Astrachan	1 50
T. S. Johnson, Port Clinton, O.	2d best plate Red Astrachan	75
D. F. Corwin, Springboro, O.	Best plate St. Lawrence	1 50
Joseph Perrine, Lebanon, O.	2d best plate St. Lawrence	75
D. F. Corwin, Springboro, O.	Best plate Summer Queen	1 50
H. L. Persing, Clyde, O.	Best plate Sweet Bough	1 50
W. W. Farnsworth, Waterville, O.	2d best plate Sweet Bough	75
U. T. Cox, Rockwood, O.	Best plate Wealthy	1 50
W. W. Farnsworth, Waterville, O.	2d best plate Wealthy	75
U. T. Cox, Rockwood, O.	Best plate Yellow Transparent	1 50
Emmett Rhoads, St. Paris, O.	2d best plate Yellow Transparent	75
Plate Apples—Winter.		
W. H. West, Chillicothe, O.	Best plate Bailey's Sweet	1 50
D. F. Corwin, Springboro, O.	2d best plate Bailey's Sweet	75
T. S. Johnson, Port Clinton, O.	Best plate Baltimore	1 50
R. G. Johnson, Gypsum, O.	2d best plate Baltimore	75
W. W. Farnsworth, Waterville, O.	Best plate Baldwin	1 50
Moses A. Hagler, Xenia, O.	2d best plate Baldwin	75
Moses A. Hagler, Xenia, O.	Best plate Bellflower Yellow	1 50
James C. Vergon, Delaware, O.	2d best plate Bellflower Yellow	75
Henry Bieber, Delaware, O.	Best plate Belmont	1 50
E. G. Stockman, Prospect, O.	2d best plate Belmont	75
U. T. Cox, Rockwood, O.	Best plate Ben Davis	1 50
W. H. West, Chillicothe, O.	2d best plate Ben Davis	75
O. C. Stockman, Prospect, O.	Best plate Dominie	1 50
E. G. Stockman, Prospect, O.	2d best plate Dominie	75
D. F. Corwin, Springboro, O.	Best plate Fallawater	1 50
Joseph Perrine, Lebanon, O.	2d best plate Fallawater	75
Joseph Perrine, Lebanon, O.	Best plate Fameuse	1 50
James C. Vergon, Delaware, O.	2d best plate Fameuse	75
C. W. Counter, Toledo, O.	Best plate Greenville	1 50
W. W. Farnsworth, Waterville, O.	2d best plate Greenville	75
U. T. Cox, Rockwood, O.	Best plate Grimes' Golden	1 50
M. I. Shively, Chillicothe, O.	2d best plate Grimes' Golden	75
Joseph Perrine, Lebanon, O.	Best plate Hubbardston	1 50
W. W. Farnsworth, Waterville, O.	2d best plate Hubbardston	75
W. W. Farnsworth, Waterville, O.	Best plate Jonathan	1 50
James C. Vergon, Delaware, O.	2d best plate Jonathan	75
Joseph Perrine, Lebanon, O.	Best plate King (Tompkins Co.)	1 50
T. S. Johnson, Port Clinton, O.	2d best plate King (Tompkins Co.)	75
E. G. Stockman, Prospect, O.	Best plate Lawver	1 50
O. C. Stockman, Prospect, O.	2d best plate Lawver	75
Joseph Perrine, Lebanon, O.	Best plate Lady	1 50
Harry Bookwalter, Hallsville, O.	2d best plate Lady	75
Harry Bookwalter, Hallsville, O.	Best plate Limber Twig	1 50
M. I. Shively, Chillicothe, O.	2d best plate Limber Twig	75
Thos. Kislingbery, Newark, O.	Best plate Morris Red	1 50
C. W. Counter, Toledo, O.	2d best plate Morris Red	75
James C. Vergon, Delaware, O.	Best plate Minkler	1 50
E. G. Stockman, Prospect, O.	Best plate Northern Spy	1 50
Harry Bookwalter, Hallsville, O.	2d best plate Northern Spy	75
Thos. Kislingbery, Newark, O.	Best plate Paradise Winter Sweet	1 50
W. H. West, Chillicothe, O.	2d best plate Paradise Winter Sweet.	75
Harry Bookwalter, Hallsville, O.	Best plate Peck's Pleasant	1 50
James C. Vergon, Delaware, O.	2d best plate Peck's Pleasant	75
Joseph Perrine, Lebanon, O.	Best plate Pewaukee	1 50
Henry Bieber, Delaware, O.	2d best plate Pewaukee	75
M. I. Shively, Chillicothe, O.	Best plate Rambo	1 50
W. W. Farnsworth, Waterville, O.	2d best plate Rambo	75
E. G. Cox, Rockwood, O.	Best plate Raule's Janet	1 50
U. T. Cox, Rockwood, O.	2d best plate Raule's Janet	75
W. W. Farnsworth, Waterville, O.	Best plate Red Canada	1 50
Joseph Perrine, Lebanon, O.	Best plate Rhode Island Greening	1 50
C. W. Counter, Toledo, O.	2d best plate Rhode sland Greening	75
U. T. Cox, Rockwood, O.	Best plate Rome Beauty	1 50
E. G. Cox, Rockwood, O.	2d best plate Rome Beauty	75
E. G. Cox, Rockwood, O.	Best plate Roxbury Russet	1 50
U. T. Cox, Rockwood, O.	2d best plate Roxbury Russet	75

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
W. W. Farnsworth, Waterville, O	Best plate Seek-No-Further	$1 50
M. I. Shively, Chillicothe, O	2d best plate Seek-No-Further	75
M. I. Shively, Chillicothe, O	Best plate Smith's Cider	1 50
H. & W. Kiefabore, Chillicothe, O	2d best plate Smith's Cider	75
W. W. Farnsworth, Waterville, O	Best plate Smoke House	1 50
E. G. Stockman, Prospect, O	2d best plate Smoke House	75
T. S. Johnson, Port Clinton, O	Best plate Spitzenberg Esopus	1 50
R. G. Johnson, Gypsum, O	2d best plate Spitzenberg Esopus	75
W. W. Farnsworth, Waterville, O	Best plate Stark	1 50
James C. Vergon, Delaware, O	2d best plate Stark	75
C. W. Counter, Toledo, O	Best plate Sweet Wine Sap	1 50
W. W. Farnsworth, Waterville, O	2d best plate Sweet Wine Sap	75
M. I. Shively, Chillicothe, O	Best plate Talman Sweet	1 50
E. G. Stockman, Prospect, O	2d best plate Talman Sweet	75
U. T. Cox, Rockwood, O	Best plate Wagener	1 50
E. G. Cox, Rockwood, O	2d best plate Wagener	75
D. F. Corwin, Springboro, O	Best plate White Pippin	1 50
Moses A. Hagler, Xenia, O	2d best plate White Pippin	75
Moses A. Hagler, Xenia, O	Best plate Wine Sap	1 50
E. G. Cox, Rockwood, O	2d best plate Wine Sap	75
U. T. Cox, Rockwood, O	Best plate York Imperial	1 50
E. G. Cox, Rockwood, O	2d best plate York Imperial	75
E. G. Cox, Rockwood, O	2d best plate New Seedling	75
Crab Apples.		
O. C. Stockman, Prospect, O	Best plate Quaker Beauty	1 50
E. G. Stockman, Prospect, O	2d best plate Quaker Beauty	75
W. W. Farnsworth, Waterville, O	Best plate Hyslop	1 50
O. C. Stockman, Prospect, O	2d best plate Hyslop	75
M. I. Shively, Chillicothe, O	Best plate Transcendant	1 50
E. G. Stockman, Prospect, O	2d best plate Transcendant	75
W. W. Farnsworth, Waterville, O	Best plate Whitney's No. 20	1 50
C. W. Counter, Toledo, O	2d best plate Whitney's No. 20	75
E. G. Stockman, Prospect, O	Best display of six varieties	3 00
O. C. Stockman, Prospect, O	2d best display of six varieties	1 50
Peaches, Quinces and Plums.		
Peaches.		
W. W. Farnsworth, Waterville, O	Best five varieties, dessert and culinary qualities to be considered	3 00
C. W. Counter, Toledo, O	2d best five varieties, dessert and culinary qualities to be considered	2 00
W. W. Farnsworth, Waterville, O	Best five varieties, market qualities to be considered	3 00
C. W. Counter, Toledo, O	2d best five varieties, market qualities to be considered	2 00
W. W. Farnsworth, Waterville, O	Best collection of eight varieties, dessert, culinary and market qualities to be considered	4 00
C. W. Counter, Toledo, O	2d best collection of eight varieties, dessert, culinary and market qualities to be considered	2 00
T. S. Johnson, Port Clinton, O	Best collection of twelve varieties, dessert, culinary and market qualities to be considered	8 00
C. W. Counter, Toledo, O	2d best collection of twelve varieties, dessert, culinary and market qualities to be considered	5 00
W. W. Farnsworth, Waterville, O	3d best collection of twelve varieties, dessert, culinary and market qualities to be considered	3 00
W. W. Farnsworth, Waterville, O	Best plate Briner	2 00
C. W. Counter, Toledo, O	2d best plate Briner	1 00
R. G. Johnson, Gypsum, O	Best plate Clairs' Choice	2 00
W. W. Farnsworth, Waterville, O	2d best plate Clairs' Choice	1 00
W. W. Farnsworth, Waterville, O	Best plate Champion	2 00
R. G. Johnson, Gypsum, O	2d best plate Champion	1 00
W. W. Farnsworth, Waterville, O	Best plate Captain Ede	2 00
C. W. Counter, Toledo, O	Best plate Crawford's Early	2 00
M. I. Shively, Chillicothe, O	2d best plate Crawford's Early	1 00
R. G. Johnson, Gypsum, O	Best plate Crawford's Late	2 00
W. W. Farnsworth, Waterville, O	2d best plate Crawford's Late	1 00
W. H. West, Chillicothe, O	Best plate Crosby	2 00
M. I. Shively, Chillicothe, O	2d best plate Crosby	1 00
M. I. Shively, Chillicothe, O	Best plate Diamond	2 00
H. & W. Kiefabore, Chillicothe, O	2d best plate Diamond	1 00

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
C. W. Counter, Toledo, O.	Best plate Early Rivers	$2 00
R. G. Johnson, Gypsum, O.	2d best plate Early Rivers	1 00
C. W. Counter, Toledo, O.	Best plate Early Toledo	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Early Toledo	1 00
R. G. Johnson, Gypsum, O.	Best plate Elberta	2 00
H. L. Persing, Clyde, O.	2d best plate Elberta	1 00
C. W. Counter, Toledo, O.	2d best plate Foster	1 00
C. W. Counter, Toledo, O.	Best plate Golden Drop	2 00
W. W. Farnsworth, Waterville O.	2d best plate Golden Drop	1 00
R. G. Johnson, Gypsum, O.	Best plate Hill's Chili	2 00
T. S. Johnson, Port Clinton, O.	2d best plate Hill's Chili	1 00
W. W. Farnsworth, Waterville, O.	Best plate Kalamazoo	2 00
C. W. Counter, Toledo, O.	2d best plate Kalamazoo	1 00
T. S. Johnson, Port Clinton, O.	Best plate Lemon Free	2 00
R. G. Johnson, Gypsum, O.	2d best plate Lemon Free	1 00
Cary W. Montgomery, Newark, O.	Best plate Lemon Cling	2 00
W. W. Farnsworth, Waterville, O.	Best plate Lewis' Seedling	2 00
W. W. Farnsworth, Waterville, O.	Best plate Mountain Rose	2 00
C. W. Counter, Toledo, O.	2d best plate Mountain Rose	1 00
W. H. West, Chillicothe, O.	Best plate Old Mixon Cling	2 00
W. H. West, Chillicothe, O.	Best plate Old Mixon Free	2 00
M. I. Shively, Chillicothe, O.	2d best plate Old Mixon Free	1 00
U. T. Cox, Rockwood, O.	Best plate Salway	2 00
Cary W. Montgomery, Newark, O.	2d best plate Salway	1 00
W. W. Farnsworth, Waterville, O.	Best plate Smock Free	2 00
R. G. Johnson, Gypsum, O.	Best plate Stump	2 00
C. W. Counter, Toledo, O.	Best plate Wheatland	2 00
R. G. Johnson, Gypsum, O.	2d best plate Wheatland	1 00
Quinces.		
Joseph Perrine, Lebanon, O.	Best plate Meech	2 00
Emmett Rhoads, St. Paris, O.	2d best plate Meech	1 00
Harry Bookwalter, Hallsville, O.	Best plate Rea's Mammoth	2 00
Emmett Rhoads, St. Paris, O.	2d best plate Rea's Mammoth	1 00
U. T. Cox, Rockwood, O.	Best plate Orange	2 00
M. I. Shively, Chillicothe, O.	2d best plate Orange	1 00
Harry Bookwalter, Hallsville, O.	Best peck of quinces	2 00
Emmett Rhoads, St. Paris, O.	2d best peck of quinces	1 00
Plums.		
W. W. Farnsworth, Waterville, O.	Best five varieties European	3 00
E. W. Woodard, Kirtland, O.	2d best five varieties European	2 00
T. S. Johnson, Port Clinton, O.	Best five varieties dessert and culinary qualities to be considered	3 00
W. W. Farnsworth, Waterville, O.	2d best five varieties dessert and culinary qualities to be considered	2 00
W. W. Farnsworth, Waterville, O.	Best five varieties market qualities	3 00
E. G. Cox, Rockwood, O.	2d best five varieties market qualities	2 00
W. W. Farnsworth, Waterville, O.	Best collection, ten varieties, dessert, culinary and market qualities	6 00
T. S. Johnson, Port Clinton, O.	2d best collection, ten varieties, dessert, culinary and market qualities	4 00
T. S. Johnson, Port Clinton, O.	Best plate Abundance	2 00
H. L. Persing, Clyde, O.	2d best plate Abundance	1 00
R. G. Johnson, Gypsum O.	Best plate Bradshaw	2 00
T. S. Johnson, Port Clinton, O.	2d best plate Bradshaw	1 00
H. L. Persing, Clyde, O.	Best plate Burbank	2 00
T. S. Johnson, Port Clinton, O.	2d best plate Burbank	1 00
T. S. Johnson, Port Clinton, O.	Best plate Coe's Golden Drop	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Coe's Golden Drop	1 00
C. W. Counter, Toledo, O.	Best plate Duane's Purple	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Duane's Purple	1 00
W. W. Farnsworth, Waterville, O.	Best plate French Damson	2 00
C. W. Counter, Toledo, O.	2d best plate of French Damson	1 00
W. W. Farnsworth, Waterville, O.	Best plate Grand Duke	2 00
C. W. Counter, Toledo, O.	2d best plate Grand Duke	1 00
T. S. Johnson, Port Clinton, O.	Best plate Guii	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Guii	1 00
H. L. Persing, Clyde, O.	Best plate German Prune	2 00
Thomas Kislingbery, Newark, O.	2d best plate German Prune	1 00
C. W. Counter, Toledo, O.	Best plate Imperial Gage	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Imperial Gage	1 00
W. H. West, Chillicothe, O.	Best plate Lombard	2 00
E. M. Woodard, Kirtland, O.	2d best plate Lombard	1 00
E. G. Cox, Rockwood, O.	Best plate Monarch	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Monarch	1 00

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
E. G. Cox, Rockwood, O.	Best plate Moore's Artic	$2 00
H. L. Persing, Clyde, O.	2d best plate Moore's Artic	1 00
E. M. Woodard, Kirtland, O.	Best plate Pond's Seedling	2 00
T. S. Johnson, Port Clinton, O.	2d best plate Pond's Seedling	1 00
R. G. Johnson, Gypsum, O.	Best plate Reine Claude	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Reine Claude	1 00
Moses A. Hagler, Xenia, O.	Best plate Richland	2 00
M. I. Shively, Chillicothe, O.	Best plate Shipper's Pride	2 00
U. T. Cox, Rockwood, O.	2d best plate Shipper's Pride	1 00
W. H. West, Chillicothe, O.	Best plate Shropshire	2 00
Josephine Perrine, Lebanon, O.	2d best plate Shropshire	1 00
T. S. Johnson, Port Clinton, O.	Best plate Union Purple	2 00
H. L. Persing, Clyde, O.	2d best plate Union Purple	1 00
H. L. Persing, Clyde, O.	Best plate Yellow Egg	2 00
T. S. Johnson, Port Clinton, O.	2d best plate Yellow Egg	1 00
Pears.		
R. G. Johnson, Gypsum, O.	Best three varieties summer	3 00
W. W. Farnsworth, Waterville, O.	2d best three varieties summer	1 50
R. G. Johnson, Gypsum, O.	Best three varieties fall	3 00
C. W. Counter, Toledo, O.	2d best three varieties fall	1 50
R. G. Johnson, Gypsum, O.	Best three varieties winter	3 00
C. W. Counter, Toledo, O.	2d best three varieties winter	1 50
R. G. Johnson, Gypsum, O.	Best three varieties dessert and culinary qualities to be considered	3 00
Emmett Rhoads, St. Paris, O.	2d best three varieties dessert and culinary qualities to be considered	1 50
W. W. Farnsworth, Waterville, O.	Best three varieties market qualities	3 00
C. W. Counter, Toledo, O.	2d best three varieties market qualities	1 50
R. G. Johnson, Gypsum, O.	Best collection fifteen varieties dessert, culinary and market qualities	12 00
W. W. Farnsworth, Waterville, O.	2d best collection fifteen varieties dessert, culinary and market qualities	8 00
T. S. Johnson, Port Clinton, O.	Best plate Anjou	2 00
R. G. Johnson, Gypsum, O.	2d best plate Anjou	1 00
T. S. Johnson, Port Clinton, O.	Best plate Bartlett	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Bartlett	1 00
R. G. Johnson, Gypsum, O.	Best plate Beurre Bosc	2 00
T. S. Johnson, Port Clinton, O.	2d best plate Beurre Bosc	1 00
C. W. Counter, Toledo, O.	Best plate Beurre Clairgeau	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Beurre Clairgeau	1 00
T. S. Johnson, Port Clinton, O.	Best plate Clapp's Favorite	2 00
T. S. Johnson, Port Clinton, O.	Best plate Doyenne Bousoc	2 00
C. W. Counter, Toledo, O.	2d best plate Doyenne Bousoc	1 00
T. S. Johnson, Port Clinton, O.	Best plate Duchess	2 00
C. W. Counter, Toledo, O.	2d best plate Duchess	1 00
T. S. Johnson, Port Clinton, O.	Best plate Flemish Beauty	2 00
R. G. Johnson, Gypsum, O.	2d best plate Flemish Beauty	1 00
C. W. Counter, Toledo, O.	Best plate Frederick Clapp	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Frederick Clapp	1 00
W. H. West, Chillicothe, O.	Best plate Howell	2 00
Joseph Perrine, Lebanon, O.	2d best plate Howell	1 00
E. G. Cox, Rockwood, O.	Best plate Keiffer	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Keiffer	1 00
E. M. Woodard, Kirtland, O.	Best plate Kirtland	2 00
T. S. Johnson, Port Clinton, O.	2d best plate Kirtland	1 00
Emmett Rhoads, St. Paris, O.	Best plate Koonce	2 00
T. S. Johnson, Port Clinton, O.	2d best plate Koonce	1 00
C. W. Counter, Toledo, O.	Best plate Lawrence	2 00
T. S. Johnson, Port Clinton, O.	2d best plate Lawrence	1 00
T. S. Johnson, Port Clinton, O.	Best plate Louise Bonne	2 00
C. W. Counter, Toledo, O.	2d best plate Louise Bonne	1 00
C. W. Counter, Toledo, O.	Best plate Seckel	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Seckel	1 00
T. S. Johnson, Port Clinton, O.	Best plate Sheldon	2 00
C. W. Counter, Toledo, O.	2d best plate Sheldon	1 00
T. S. Johnson, Port Clinton, O.	Best plate Vermont Beauty	2 00
R. G. Johnson, Gypsum, O.	2d best plate Vermont Beauty	1 00
C. W. Counter, Toledo, O.	Best plate Winter Nelis	2 00
W. W. Farnsworth, Waterville, O.	2d best plate Winter Nelis	1 00
Grapes.		
W. H. West, Chillicothe, O.	Best six varieties table qualities	5 00
Cary W. Montgomery, Newark, O.	2d best six varieties table qualities	3 00

HORTICULTURAL PRODUCTS—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
W. H. West, Chillicothe, O.	Best six varieties market qualities	$5 00
Cary W. Montgomery, Newark, O.	2d best six varieties market qualities	3 00
W. H. West, Chillicothe, O.	Best collection of ten varieties	8 00
Cary W. Montgomery, Newark, O.	2d best collection of ten varieties	4 00
W. H. West, Chillicothe, O.	Best collection of twenty varieties	12 00
E. M. Woodard, Kirtland, O.	2d best collection of twenty varieties	8 00
W. H. West, Chillicothe, O.	Best plate Agawam	2 00
E. M. Woodard, Kirtland, O.	2d best plate Agawam	1 00
E. M. Woodard, Kirtland, O.	Best plate Alice	2 00
Cary W. Montgomery, Newark, O.	Best plate Brighton	2 00
W. H. West, Chillicothe, O.	2d best plate Brighton	1 00
W. H. West, Chillicothe, O.	Best plate Campbell's Early	2 00
C. W. Counter, Toledo, O.	2d best plate Campbell's Early	1 00
W. H. West, Chillicothe, O.	Best plate Catawba	2 00
Harry Bookwalter, Hallsville, O.	2d best plate Catawba	1 00
M. I. Shively, Chillicothe, O.	Best plate Concord	2 00
W. H. West, Chillicothe, O.	2d best plate Concord	1 00
E. M. Woodard, Kirtland, O.	Best plate Delaware	2 00
W. H. West, Chillicothe, O.	2d best plate Delaware	1 00
W. H. West, Chillicothe, O.	Best plate Empire State	2 00
Harry Bookwalter, Hallsville, O.	2d best plate Empire State	1 00
Cary W. Montgomery, Newark, O.	Best plate Green Mountain	2 00
E. M. Woodard, Kirtland, O.	2d best plate Green Mountain	1 00
E. M. Woodard, Kirtland, O.	Best plate Ives	2 00
W. H. West, Chillicothe, O.	2d best plate Ives	1 00
W. H. West, Chillicothe, O.	Best plate Lady Washington	2 00
J. B. Stewart, Thornville, O.	Best plate Lindley	2 00
W. H. West, Chillicothe, O.	2d best plate Lindley	1 00
E. M. Woodard, Kirtland, O.	Best plate Moore's Diamond	2 00
Cary W. Montgomery, Newark, O.	2d best plate Moore's Diamond	1 00
E. M. Woodard, Kirtland, O.	Best plate Moore's Early	2 00
Cary W. Montgomery, Newark, O.	2d best plate Moore's Early	1 00
E. M. Woodard, Kirtland, O.	Best plate Nectar	2 00
Cary W. Montgomery, Newark, O.	Best plate Niagara	2 00
E. M. Woodard, Kirtland, O.	2d best plate Niagara	1 00
W. H. West, Chillicothe, O.	Best plate Norton's Virginia	2 00
E. M. Woodard, Kirtland, O.	2d best plate Norton's Virginia	1 00
E. M. Woodard, Kirtland, O.	Best plate Presley	2 00
W. H. West, Chillicothe, O.	Best plate Pocklington	2 00
Cary W. Montgomery, Newark, O.	2d best plate Pocklington	1 00
Cary W. Montgomery, Newark, O.	Best plate Salem	2 00
E. M. Woodard, Kirtland, O.	2d best plate Salem	1 00
W. H. West, Chillicothe, O.	Best plate Wilder	2 00
W. H. West, Chillicothe, O.	Best plate Woodruff Red	2 00
M. I. Shively, Chillicothe, O.	2d best plate Woodruff Red	1 00
W. H. West, Chillicothe, O.	2d best plate Worden	1 00
J. Reichenbach, Columbus, O.	Best new and valuable seedling	2 00
W. H. West, Chillicothe, O.	2d best new and valuable seedling	1 00
County Fruits.		
W. W. Farnsworth, Waterville, O. (Lucas Co.)	Best exhibit of 100 plates	100 00
James E. Carpenter, Republic, O. (Seneca Co.)	2d best exhibit of 100 plates	85 00
E. M. Woodard, Kirtland, O. (Lake Co.)	3d best exhibit of 100 plates	65 00
T. S. Johnson, Port Clinton, O. (Ottawa Co.)	4th best exhibit of 100 plates	50 00
M. I. Shively, Chillicothe, O. (Ross Co)	5th best exhibit of 100 plates	40 00
D. F. Corwin, Springboro, O. (Warren Co.)	6th best exhibit of 100 plates	30 00

SEVENTH DEPARTMENT—PLANTS AND FLOWERS.

WM. MILLER, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amt.
Decorative and Flowering Plants.		
Mrs. E. L. Charles, Columbus, O..........	2d best collection of palms, twenty varieties	$8 00
Mrs. E. L. Charles, Columbus, O..........	Best single specimen of palm.........	5 00
Mrs. E. L. Charles, Columbus, O..........	Best collection of ferns and lycopodium	10 00
Mrs. E. L. Charles, Columbus, O..........	2d best collection of variegated foliage plants	5 00
Mrs. E. L. Charles, Columbus, O..........	Best collection of stove and greenhouse plants	20 00
Susie E. Perry, Columbus, O..............	2d best collection of stove and greenhouse plants...........	10 00
Mrs. E. L. Charles, Columbus, O..........	Best collection of begonias	8 00
Mrs. E. L. Charles, Columbus, O..........	Best collection of cannas	10 00
Mrs. E. L. Charles, Columbus, O..........	Best collection of geraniums	8 00
Mrs. E. L. Charles, Columbus, O..........	Best collection of asters	5 00
Miss Nellie E. Charles, Columbus, O.....	Best single basket filled with plants	3 00
Mrs. E. L. Charles, Columbus, O...........	2d best single basket filled with plants	2 00
Mrs. E. L. Charles, Columbus, O...........	Best pair of vases filled with plants	5 00
Mrs. E. L. Charles, Columbus, O...........	Best pair of hanging baskets, filled	4 00
Miss Nellie E. Charles, Columbus, O......	2d best pair hanging baskets, filled.	2 00
Miss Nellie E. Charles, Columbus, O......	Best single specimen rubber plant..	3 00
Mrs. E. L. Charles, Columbus, O...........	2d best single specimen rubber plant	2 00
Mrs. E. L. Charles, Columbus, O...........	Best single specimen Asparagus, Spengeri or Plumosus	3 00
Miss Nellie E. Charles, Columbus, O......	2d best single specimen asparagus, spengeri or plumosis...............	2 00
Cut Flowers and Floral Designs.		
Mrs. E. L. Charles, Columbus, O...........	Best pair bouquets any style........	10 00
Susie E. Perry, Columbus, O...............	2d best pair bouquets any style.......	5 00
Susie E. Perry, Columbus, O...............	Best dining table vase, 24 inches...	10 00
Miss Nellie E. Charles, Columbus, O......	2d best dining table vase, 24 inches..	5 00
Susie E. Perry, Columbus, O...............	Best dining table vase, 12 inches.....	5 00
Mrs. E. L. Charles, Columbus, O...........	2d best dining table vase, 12 inches..	3 00
Mrs. E. L. Charles, Columbus, O...........	Best large festival design	12 00
Miss Nellie E. Charles, Columbus, O......	2d best large festival design........	6 00
Mrs. E. L. Charles, Columbus, O...........	Best large funeral design............	12 00
Miss Nellie E. Charles, Columbus, O......	2d best large funeral design.........	6 00
Mrs. E. L. Charles, Columbus, O...........	Best collection of small designs.....	12 00
Miss Nellie E. Charles, Columbus, O......	2d best collection of small designs.	6 00
Mrs. E. L. Charles, Columbus, O...........	Best display of cut roses	10 00
Cary W. Montgomery, Newark, O.........	Best display of cut gladioli	12 00
Mrs. E. L. Charles, Columbus, O...........	2d best display of cut gladioli.......	6 00
Cary W. Montgomery, Newark, O.........	Best display of cut dahlias...........	8 00
Mrs. E. L. Charles, Columbus, O...........	2d best display of cut dahlias.......	6 00
Mrs. E. L. Charles, Columbus, O...........	Best display of cut carnations	8 00
Miss Nellie E. Charles, Columbus, O......	2d best display of cut carnations...	6 00
Miss Nellie E. Charles, Columbus, O......	Best display of cut asters	8 00
Mrs. E. L. Charles, Columbus, O...........	2d best display of cut asters	4 00
Mrs. E. L. Charles, Columbus, O...........	Best display of cut flowers	15 00
Miss Nellie E. Charles, Columbus, O......	2d best display of cut flowers........	10 00

ELEVENTH DEPARTMENT—WOMAN'S WORK.

Samuel Taylor, Member in Charge.

Owner's Name and Postoffice.	Name of Article.	Amt.
Household Fabrics—Amateur.		
Mrs. C. Doughty, Kirkpatrick, O	Best velvet quilt	$4 00
Mrs. Sarah Semmis, Westerville, O	2d best velvet quilt	2 00
Elizabeth McMullen, Columbus, O	Best silk quilt	3 00
Miss Joe Green, Linden Heights, O	2d best silk quilt	2 00
Elizabeth McMullen, Columbus, O	Best Japanese quilt (crazy)	3 00
Mrs. H. T. Sibel, Westerville, O	2d best Japanese quilt (crazy)	2 00
Nellie Harrison, Linden Heights, O	Best worsted quilt	2 00
Mrs. H. T. Sibel, Westerville, O	2d best worsted quilt	1 00
Miss Mary Scott, Marysville, O	Best log cabin quilt	2 00
Jennie S. Gillett, Columbus, O	Best white quilt	2 00
Miss Minnie Russell, Springfield, O	2d best white quilt	1 00
Miss Katherine Stiller, Columbus, O	Best calico patchwork quilt	2 00
Mrs. H. Huntington, Columbus, O	2d best calico patchwork quilt	1 00
Mrs. M. Rinehart, Marion, O	Best cradle quilt	2 00
Jennie S. Gillett, Columbus, O	2d best cradle quilt	1 00
Mrs. Sarah Semmis, Westerville, O	Best silk comfort	2 00
Mrs. C. Doughty, Kirkpatrick, O	2d best silk comfort	1 00
Mrs. C. Doughty, Kirkpatrick, O	Best worsted comfort	2 00
Miss Minnie Russell, Springfield, O	2d best worsted comfort	1 00
Mrs. H. C. Bostwick, Newark, O	Best hearth rug	2 00
Mrs. C. Doughty, Kirkpatrick, O	2d best hearth rug	1 00
Mrs. Sarah Semmis, Westerville, O	Best ten yards rag carpet	3 00
Knitting—Amateur.		
Miss M. Johnson, Dayton, O	Best pair silk socks	2 00
Mrs. Messenger, Xenia, O	2d best pair silk socks	1 00
Miss Mattie Hall, Lexington, Ky	Best pair woolen stockings	2 00
Mrs. W. A. Calhoun, Newcomerstown, O	2d best pair woolen stockings	1 00
Mrs. L. C. Huckstep, Bowling Green, Mo.	Best pair woolen socks	2 00
Mrs. L. C. Huckstep, Bowling Green, Mo.	Best pair golf gloves	2 00
Mrs. L. C. Huckstep, Bowling Green, Mo.	Best pair silk mittens	2 00
L. V. Johnson, Dayton, O	2d best pair silk mittens	1 00
Mrs. L. C. Huckstep, Bowling Green, Mo.	Best pair woolen mittens	2 00
Mrs. C. Doughty, Kirkpatrick, O	2d best pair woolen mittens	1 00
Caroline G. Ackley, Columbus, O	Best pair slippers	2 00
Mary V. Smucker, Newark, O	2d best pair slippers	1 00
Mrs. A. B. Swisher, Marysville, O	Best bed spread	2 00
Mrs. M. B. Clutter, Pataskala, O	2d best bed spread	1 00
Miss Alice Ackley, Columbus, O	Best sweater	2 00
Miss Louise H. Ackley, Columbus, O	2d best sweater	1 00
Miss Mattie Hall, Lexington, Ky	Best afghan, large	3 00
Mrs. Caroline Ackley, Columbus, O	Best display of five pieces	3 00
Miss Mattie Hall, Lexingtno, Ky	2d best display of five pieces	2 00
Crochet Work—Amateur.		
Miss M. Johnson, Dayton, O	Best bed spread	2 00
Mary V. Smucker, Newark, O	2d best bed spread	1 00
Minnie Sibel Ward, Westerville, O	Best skirt	2 00
Miss Mattie Hall, Lexingtno, Ky	2d best skirt	1 00
Miss Della Finley, Columbus, O	Best slippers	2 00
Miss Alice Ackley, Columbus, O	2d best slippers	1 00
Mrs. F. J. Bartholomew, Huntsburg, O	Best afghan, large	2 00
Mary V. Smucker, Newark, O	2d best afghan, large	1 00
Mrs. M. Rinehart, Marion, O	2d best scarf	50
Mrs. L. Trimble, Marion, O	Best cape	1 00
Miss M. Johnson, Dayton, O	2d best cape	50
Miss L. P. Warman, Norwood, O	Best doylie	1 00
Mrs. M. Rinehart, Marion, O	2d best doylie	50
Mrs. C. Doughty, Kirkpatrick, O	Best woolen lace, one yard	1 00
Mrs. L. Trimble, Marion, O	Best linen lace, one yard	1 00
Mary V. Smucker, Newark, O	2d best linen lace, one yard	50
Miss Louise H. Ackley, Columbus, O	Best infant's sacque	1 00
Mrs. L. C. Huckstep, Bowling Green, Mo.	2d best infant's sacque	50
Mrs. L. C. Huckstep, Bowling Green, Mo.	Best infant's hood	1 00
Miss L. P. Warman, Norwood, O	2d best infant's hood	50
Mrs. L. Trimble, Marion, O	2d best infant's skirt	50
Miss Mattie Hall, Lexington, Ky	Best afghan for child's cab	1 00
L. V. Johnson, Dayton, O	2d best afghan for child's cab	50
Miss Mattie Hall, Lexington, Ky	Best shawl	1 00
Mrs. L. Trimble, Marion, O	2d best shawl	50
Mrs. L. Trimble, Marion, O	Best display of five pieces	3 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
Hand Needle Work—Amateur.		
Elizabeth McMullen, Columbus, O.	Best pair pillow cases	$2 00
Mrs. J. E. Harris, Columbus, O.	2d best pair pillow cases	1 00
L. V. Johnson, Dayton, O.	Best sheet	2 00
Mrs. C. S. David, Marysville, O.	2d best sheet	1 00
Mrs. C. Doughty, Kirkpatrick, O.	Best bed spread	2 00
Mrs. L. P. Warman, Norwood, O.	2d best bedspread	1 00
Mrs. L. Trimble, Marion, O.	Best suit underwear	3 00
Miss Nellie Slegar, Effingham, Ill.	Best dressing jacket	2 00
M. Minnie Smith, Newark, O.	Best night dress	2 00
Miss Nellie Slegar, Effingham, Ill.	Best night shirt	2 00
Mary V. Smucker, Newark, O.	Best short underskirt	2 00
Miss Anna Bond, Toledo, O.	2d best short underskirt	1 00
Mary V. Smucker, Newark, O.	Best corset cover	2 00
Miss L. P. Warman, Norwood, O.	2d best corset cover	1 00
Miss Carrie Huntington, Columbus, O.	Best sofa pillow	2 00
Mrs. D. O. Clevenger, Columbus, O.	2d best sofa pillow	1 00
Mrs. W. A. Calhoun, Newcomerstown, O.	Best display of eight pieces	3 00
Miss Nellie Slegar, Effingham, Ill.	2d best display of eight pieces	2 00
Machine Sewing—Amateur.		
Mary V. Smucker, Newark, O.	Best suit lady's underwear	2 00
Mary V. Smucker, Newark, O.	Best lady's dress	2 00
Miss L. P. Warman, Norwood, O.	2d best lady's dress	1 00
Mrs. C. Doughty, Kirkpatrick, O.	Best night dress	1 00
Miss L. P. Warman, Norwood, O.	2d best night dress	50
Mrs. C. Doughty, Kirkpatrick, O.	Best dressing jacket	2 00
Mary V. Smucker, Newark, O.	2d best dressing jacket	1 00
Miss Anna Bond, Toledo, O.	Best short underskirt	1 00
Mrs. C. Doughty, Kirkpatrick, O.	Best night shirt	1 00
Mary V. Smucker, Newark, O.	2d best night shirt	50
Mrs. C. Doughty, Kirkpatrick, O.	Best skirt	1 00
Miss L. P. Warman, Norwood, O.	2d best skirt	50
Mrs. C. Doughty, Kirkpatrick, O.	Best corset cover	1 00
Miss L. P. Warman, Norwood, O.	2d best corset cover	50
Mrs. C. Doughty, Kirkpatrick, O.	Best dress apron	1 00
Miss L. P. Warman, Norwood, O.	2d best dress apron	50
Mrs. C. Doughty, Kirkpatrick, O.	Best display of five pieces	3 00
Miss Mary Scott, Marysville, O.	2d best display of five pieces	2 00
Children's Class.		
Helen Wilson, Dayton, O.	Best outline embroidery	1 00
Rhea B. Knighton, Hamden Junction, O.	2d best outline embroidery	50
Helen Wilson, Dayton, O.	Best silk embroidery	1 00
Helen Wilson, Dayton, O.	Best cross stitch embroidery	1 00
Rhea B. Knighton, Hamden Junction, O.	Best drawn work	1 00
Helen Wilson, Dayton, O.	2d best drawn work	50
Helen Wilson, Dayton, O.	2d best knitting	50
Helen Wilson, Dayton, O.	Best crocheting	1 00
Helen Wilson, Dayton, O.	Best pyrography	1 00
Agnes A. Jorden, Columbus, O.	Best water color	1 00
Helen Wilson, Dayton, O.	2d best water color	50
Agnes A. Jorden, Columbus, O.	Best pencil drawing	1 00
Agnes A. Jorden, Columbus, O.	2d best pencil drawing	50
Outline Embroidery—Amateur.		
Miss Nellie Slegar, Effingham, Ill.	Best bed spread	2 00
Miss Mattie Hall, Lexington, Ky.	Best pair pillow cases	1 00
Mrs. A. B. Swisher, Marysville, O.	2d best pair pillow cases	50
Mrs. A. B. Swisher, Marysville, O.	Best sheet	1 00
Miss Anna Bond, Toledo, O.	2d best sheet	50
Miss Mattie Hall, Lexington, Ky.	Best centerpiece	1 00
Miss M. Johnson, Dayton, O.	2d best centerpiece	50
Miss Mattie Hall, Lexington, Ky.	Best lunch cloth	1 00
Miss M. Rinehart, Marion, O.	2d best lunch cloth	50
L. V. Johnson, Dayton, O.	Best table cover	1 00
Miss Mattie Hall, Lexington, Ky.	2d best table cover	50
Mrs. L. Trimble, Marion, O.	Best couch pillow	1 00
Elizabeth Leigh, Groveport, O.	2d best couch pillow	50
Miss Mattie Hall, Lexington, Ky.	Best six doylies	1 00
Miss M. Johnson, Dayton, O.	2d best six doylies	50
L. V. Johnson, Dayton, O.	Best tray cloth	1 00
Mrs. L. Trimble, Marion, O.	2d best tray cloth	50

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
L. V. Johnson, Dayton, O.	Best display of five pieces	$3 00
Miss Mattie Hall, Lexington, Ky	2d best display of five pieces	2 00
Cross-Stitch Embroidery—Amateur.		
Miss Mattie Hall, Lexington, Ky	Best afghan, large	2 00
Miss Anna Bond, Toledo, O.	2d best afghan, large	1 00
M. Minnie Smith, Newark, O.	Best sofa pillow	2 00
M. Minnie Smith, Newark, O.	Best handkerchief case	2 00
Mrs. H. C. Bostwick, Newark, O.	2d best handkerchief case	1 00
M. Minnie Smith, Newark, O.	Best glove case	2 00
Miss Mattie Hall, Lexington, Ky	2d best glove case	1 00
L. V. Johnson, Dayton, O.	Best table cover	2 00
Mrs. H. C. Bostwick, Newark, O.	2d best table cover	1 00
M. Minnie Smith, Newark, O.	Best pin cushion	2 00
Mrs. E. A. Mullen, Marysville, O.	2d best pin cushion	1 00
M. Minnie Smith, Newark, O.	Best shirtwaist set	2 00
Miss M. Johnson, Dayton, O.	2d best shirtwaist set	1 00
M. Minnie Smith, Newark, O.	Best display of five pieces	3 00
L. V. Johnson, Dayton, O.	2d best display of five pieces	2 00
Embroidery—Amateur.		
Mrs. C. S. David, Marysville, O.	Best pair pillow cases	2 00
Mrs. H. C. Bostwick, Newark, O.	2d best pair pillow cases	1 00
Mary V. Smucker, Newark, O.	Best top sheet	2 00
Miss L. P. Warman, Norwood, O.	2d best top sheet	1 00
Mrs. C. M. Nichols, Columbus, O.	Best table cloth	2 00
Mrs. C. M. Nichols, Columbus, O.	Best twelve dinner napkins	2 00
Miss Mattie Hall, Lexington, Ky	Best lunch cloth	2 00
Mary V. Smucker, Newark, O.	2d best lunch cloth	1 00
Miss Mattie Hall, Lexington, Ky	Best center piece	2 00
Miss Ellen Sharpless, Marion, O.	2d best center piece	1 00
Miss Mattie Hall, Lexington, Ky	Best tray cloth	2 00
Mrs. C. S. David, Marysville, O.	2d best tray cloth	1 00
Miss Mattie Hall, Lexington, Ky	Best sideboard cover	2 00
Miss L. P. Warman, Norwood, O.	2d best sideboard cover	1 00
Mrs. E. Buck, Lockland, O.	Best pair towels	2 00
Mrs. C. M. Nichols, Columbus, O.	2d best pair towels	1 00
Miss Anna Bond, Toledo, O.	Best handkerchief	2 00
Miss Mattie Hall, Lexington, Ky	2d best handkerchief	1 00
Miss Mattie Hall, Lexington, Ky	Best six doylies	2 00
Miss Julia Gill, Columbus, O.	2d best six doylies	1 00
Miss Anna Bond, Toledo, O.	Best initials on handkerchief	2 00
Mrs. L. Trimble, Marion, O.	2d best initials on handkerchief	1 00
Miss Anna Bond, Toledo, O.	Best shirtwaist set	2 00
Miss Mary Scott, Marysville, O.	2d best shirtwaist set	1 00
Miss L. P. Warman, Norwood, O.	Best shirtwaist	2 00
Miss Nellie Slegar, Effingham, Ill	2d best shirtwaist	1 00
Miss Mattie Hall, Lexington, Ky	Best specimen of mountmellick	2 00
Mrs. Messenger, Xenia, O.	2 best specimen of mountmellick	1 00
Drawn Work—Amateur.		
Mrs. Messenger, Xenia, O.	Best lunch cloth	2 00
Elizabeth Whissel, Columbus, O.	2d best lunch cloth	1 00
Mrs. J. M. Coe, Mt. Gilead, O.	Best center piece	2 00
Miss Anna Bond, Toledo, O.	2d best center piece	1 00
Mrs. Messenger, Xenia, O.	Best pair pillow cases	2 00
Mrs. C. H. Kulencamp, Marion, O.	2d best pair pillow cases	1 00
Mrs. H. C. Bostwick, Newark, O.	Best sheet	2 00
Mrs. E. W. Maier, Troy, O.	2d best sheet	1 00
Mrs. C. S. David, Marysville, O.	Best tray cloth	2 00
Miss L. P. Warman, Norwood, O.	2d best tray cloth	1 00
Miss L. P. Warman, Norwood, O.	Best dresser cover	2 00
Mrs. M. E. Sharpless, Marion, O.	2d best dresser cover	1 00
Mrs. Messenger, Xenia, O.	Best six napkins	2 00
L. V. Johnson, Dayton, O.	2d best six napkins	1 00
Mrs. Messenger, Xenia, O.	Best six doylies	2 00
Miss L. P. Warman, Norwood, O.	2d best six doylies	1 00
Mrs. C. S. David, Marysville, O.	Best pair of towels	2 00
Miss L. P. Warman, Norwood, O.	2d best pair of towels	1 00
Mrs. L. Trimble, Marion, O.	Best specimen of silk	2 00
Miss L. P. Warman, Norwood, O.	2d best specimen of silk	1 00
Elizabeth Leigh, Groveport, O.	Best specimen hemstitching	2 00
Mrs. A. B. Swisher, Marysville, O.	2d best specimen hemstitching	1 00
Mrs. Messenger, Xenia, O.	Best handkerchief	2 00
Mrs. E. Wells, Columbus, O.	2d best handkerchief	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
Silk Embroidery—Amateur.		
Elizabeth Leigh, Groveport, O.	Best lady's flannel skirt	$2 00
Miss Mary Scott, Marysville, O.	2d best lady's flannel skirt	1 00
Miss L. P. Warman, Norwood, O.	Best infant's cloak	2 00
Miss Mary Scott, Marysville, O.	2d best infant's cloak	1 00
Mrs. Messenger, Xenia, O.	Best infant's shawl or blanket	2 00
Miss L. P. Warman, Norwood, O.	Best child's dress	2 00
Miss Nellie Slegar, Effingham, Ill.	2d best child's dress	1 00
Miss M. Johnson, Dayton, O.	Best opera bag	2 00
Mrs. J. E. Harris, Columbus, O.	2d best opera bag	1 00
Mrs. C. M. Nichols, Columbus, O.	Best monogram	2 00
Miss Mary Scott, Marysville, O.	2d best monogram	1 00
Mrs. L. Trimble, Marion, O.	Best specimen	2 00
Mrs. M. Rinehart, Marion, O.	2d best specimen	1 00
Miss Anna Bond, Toledo, O.	Best display of five pieces	5 00
Miss Mary Scott, Marysville, O.	2d best display of five pieces	2 00
Battenburg Lace—Amateur.		
Miss L. P. Warman, Norwood, O.	Best curtains	2 00
Miss Mary Scott, Marysville, O.	2d best curstains	1 00
Mrs. J. M. Coe, Mt. Gilead, O.	Best center piece	2 00
Maud McNabb, Mohawk Village, O.	2d best center piece	1 00
Mrs. C. S. David, Marysville, O.	Best dresser cover	2 00
Mrs. J. M. Coe, Mt. Gilead, O.	2d best dresser cover	1 00
Mrs. J. M. Coe, Mt. Gilead, O.	Best table cover	2 00
Jennie S. Gillett, Columbus, O.	2d best table cover	1 00
Mrs. L. P. Warman, Norwood, O.	Best bolero	2 00
Miss Nellie Slegar, Effingham, Ill.	2d best bolero	1 00
Mrs. J. M. Coe, Mt. Gilead, O.	Best collar	2 00
Jennie S. Gillett, Columbus, O.	2d best collar	1 00
Mrs. M. Rinehart, Marion, O.	Best medallion for dress garniture.	2 00
Jennie S. Gillett, Columbus, O.	2d best medallion for dress garniture	1 00
Mrs. G. E. Brittain, Dayton, O.	Best specimen	2 00
Maud McNabb, Mohawk Village, O.	2d best specimen	1 00
Mrs. L. Trimble, Marion, O.	Best six doylies	2 00
Mrs. M. Rinehart, Marion, O.	2d best six doylies	1 00
Point Lace—Amateur.		
Mrs. O. J. Miller, Mt. Gilead, O.	Best handkerchief	2 00
Mrs. J. M. Coe, Mt. Gilead, O.	2d best handkerchief	1 00
Mrs. J. M. Coe, Mt. Gilead, O.	Best collar	2 00
Mrs. O. J. Miller, Mt. Gilead, O.	2d best collar	1 00
Mrs. J. M. Coe, Mt. Gilead, O.	Best scarf	2 00
Mrs. O. J. Miller, Mt. Gilead, O.	2d best scarf	1 00
Mrs. Grace Mark, Columbus, O.	Best dress garniture	2 00
Alice M. Hipple, Delaware, O.	2d best dress garniture	1 00
Mrs. O. J. Miller, Mt. Gilead, O.	Best tie ends	2 00
Fanny Jackson, Cedarville, O.	2d best tie ends	1 00
Mrs. E. A. Mullen, Marysville, O.	Best six protection collars	2 00
Mrs. O. J. Miller, Mt. Gilead, O.	Best infant's cap	2 00
Mrs. J. M. Coe, Mt. Gilead, O.	2d best infant's cap	1 00
Mrs. O. J. Miller, Mt. Gilead, O.	Best specimen	2 00
Mrs. J. M. Coe, Mt. Gilead, O.	2d best specimen	1 00
Mrs. O. J. Miller, Mt. Gilead, O.	Best yoke	2 00
Miss Nellie Slegar, Effingham, Ill.	2d best yoke	1 00
Mrs. J. M. Coe, Mt. Giead, O.	Best specimen point applique	2 00
Miss Anna Bond, Toedo, O.	2d best specimen point applique	1 00
Lace and Tatting.		
Miss L. P. Warman, Norwood, O.	Best specimen Marie Antoinette	2 00
Miss Mary Scott, Marysvile, O.	2d best specimen Marie Antoinette	1 00
Miss Anna Bond, Toledo, O.	Best specimen Reticella	2 00
Miss Mary Scott, Marysville, O.	2d best specimen Reticella	1 00
Miss Mary Scott, Marysville, O.	Best specimen of Burges	2 00
Miss Anna Bond, Toledo, O.	2d best specimen of Burges	1 00
Elizabeth Leigh, Groveport, O.	Best specimen of Duchess	2 00
Miss L. P. Warman, Norwood, O.	Best specimen of Teneriffe	2 00
Mrs. E. Wells, Columbus, O.	2d best specimen of Teneriffe	1 00
Mrs. E. R. Porter, Columbus, O.	Best specimen wrought guipure	2 00
Mrs. H. C. Bostwick, Newark, O.	2d best specimen wrought guipure.	1 00
Sallie Shearer, Somerset, O.	Best handkerchief	2 00
Miss Viola R. Fox, Springfield, O.	2d best handkerchief	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
Miss Viola R. Fox, Springfield, O.	Best tie ends	$2 00
Miss Nellie Siegar, Effingham, Ill.	2d best tie ends	1 00
Miss Anna Bond, Toledo, O.	Best collar	2 00
Mrs. M. Rinehart, Marion, O.	2d best collar	1 00
Miss Viola R. Fox, Springfield, O.	Best wrist bag	2 00
Miss Anna Bond, Toledo, O.	2d best wrist bag	1 00
Mrs. J. E. Harris, Columbus, O.	Best darned tulle lace	2 00
Mrs. H. C. Bostwick, Newark, O.	2d best darned tulle lace	1 00
Mrs. C. Doughty, Kirkpatrick, O	Best darned tulle sofa pillow	2 00
Miss L. P. Warman, Norwood, O.	2d best darned tulle sofa pillow	1 00
Mrs. H. C. Bostwick, Newark, O.	Best monogram in lace for marking linen	2 00
Miss Anna Bond, Toledo, O.	2d best monogram in lace for marking linen	1 00

Fancy Work—Amateur.

Owner's Name and Postoffice.	Name of Article.	Amt.
Mrs. Sarah McKinley, Columbus, O.	Best huckaback center piece	2 00
Mrs. Caroline Ackley, Columbus, O.	2d best huckaback center piece	1 00
Miss Viola R. Fox, Springfield, O.	Best shirtwaist	2 00
Miss L. P. Warman, Norwood, O.	2d best shirtwaist	1 00
Miss Kathryn Meyer, Troy, O.	Best three protection collars	2 00
Charlotte M. Harris, Springfield, O.	2d best three protection collars	1 00
Jennie S. Gillett, Columbus, O.	Best shirtwaist set	2 00
Miss Anna Bond, Toledo, O.	2d best shirtwaist set	1 00
Mrs. Sarah McKinley, Columbus, O.	Best three doylies	2 00
Miss Mattie Hall, Lexington, Ky.	2d best three doylies	1 00
L. V. Johnson, Dayton, O.	Best display of basketry	2 00
Miss Carrie Mosteller, Newark, O.	2d best display of basketry	1 00
Mrs. E. A. Mullen, Marysville, O.	Best couch pillow	2 00
Mrs. C. P. Sager, Troy, O.	2d best couch pillow	1 00
Miss L. P. Warman, Norwood, O.	Best magazine cover	2 00
Miss Eva B. Mosteller, Newark, O.	2d best magazine cover	1 00
Charlotte M. Harris, Springfield, O.	Best handkerchief case	2 00
Mrs. E. A. Mullen, Marysville, O.	2d best handkerchief case	1 00
Miss Eva B. Mosteller, Newark, O.	Best glove case	2 00
L. V. Johnson, Dayton, O.	Best fancy work bag	2 00
Miss Julia Gill, Columbus, O.	2d best fancy work bag	1 00
Charlotte M. Harris, Springfield, O.	Best party bag	2 00
Miss M. Johnson, Dayton, O.	2d best party bag	1 00
Miss L. P. Warman, Norwood, O.	Best laundry bag	2 00
L. V. Johnson, Dayton, O.	2d best laundry bag	1 00
Mary V. Smucker, Newark, O.	Best shopping bag	2 00
Mrs. L. C. Huckstep, Bowling Green, Mo.	2d best shopping bag	1 00
Miss Eva B. Mosteller, Newark, O.	Best book cover	2 00
Miss Julia Gill, Columbus, O.	2d best book cover	1 00
Mrs. E. Buck, Lockland, O.	Best sofa pillow	2 00
Mrs. Caroline Ackley, Columbus, O.	2d best sofa pillow	1 00
Mrs. E. Buck, Lockland, O.	Best pin cushion	2 00
Mrs. E. A. Mullen, Marysville, O.	2d best pin cushion	1 00
Charlotte M. Harris, Springfield, O.	Best veil case	2 00
Miss Eva B. Mosteller, Newark, O.	2d best veil case	1 00
Miss Julia Gill, Columbus, O.	Best opera bag	2 00
Miss L. P. Warman, Norwood, O.	2d best opera bag	1 00
Miss M. Johnson, Dayton, O.	Best scrap basket	2 00
Miss Carrie Mosteller, Newark, O.	2d best scrap basket	1 00
Miss Louise H. Ackley, Columbus, O.	Best two reticules	2 00
Miss Mary Scott, Marysville, O.	2d best two reticules	1 00
Miss Carrie Mosteller, Newark, O.	Best cravat case	2 00
Miss Nellie Siegar, Effingham, Ill.	2d best cravat case	1 00
Mrs. J. E. Harris, Columbus, O.	Best center piece, blue and white.	2 00
Miss Julia Gill, Columbus, O.	2d best center piece, blue and white	1 00
Miss Mattie Hall, Lexington, Ky.	Best specimen cornation cord wood	2 00
Mrs. L. Trimble, Marion, O.	2d best specimen carnation cord work	1 00

Delft Embroidery—Amateur.

Owner's Name and Postoffice.	Name of Article.	Amt.
Miss Mary Scott, Marysville, O.	Best lunch cloth	2 00
Mrs. C. H. Kulencamp, Marion, O.	Best center piece	2 00
Miss Julia Gill, Columbus, O.	2d best center piece	1 00
Mrs. M. Rinehart, Marion, O.	Best tray cloth	2 00
Mrs. H. C. Bostwick, Newark, O.	2d best tray cloth	1 00
Miss Mary Scott, Marysville, O.	Best six doylies	2 00
Mrs. C. M. Nichols, Columbus, O.	Best pin cushion	2 00
Miss Mary Scott, Marysville, O.	2d best pin cushion	1 00
Miss Mattie Hall, Lexington, Ky.	Best specimen	2 00
Miss L. P. Warman, Norwood, O.	2d best specimen	1 00
Miss Mattie Hall, Lexington, Ky.	Best display of five pieces	2 00
Miss Anna Bond, Toledo, O.	2d best display of five pieces	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
Pyrography—Amateur.		
Miss Anna Bond, Toledo, O.	Best chair	$2 00
Miss Nellie Slegar, Effingham, Ill.	2d best chair	1 00
Jessie F. McClane, Columbus, O.	Best tabourette	2 00
Mrs. G. E. Brittain, Dayton, O.	2d best tabourette	1 00
Miss Anna Bond, Toledo, O.	Best plate rack	2 00
Miss Nellie Slegar, Effingham, Ill.	2d best plate rack	1 00
J. Campbell Lynas, Columbus, O.	Best Dutch stand	2 00
Miss Anna Bond, Toledo, O.	2d best Dutch stand	1 00
Charlotte M. Harris, Springfield, O.	Best handkerchief box or case	2 00
J. Campbell Lynas, Columbus, O.	2d best handkerchief box or case	1 00
Miss Anna Bond, Toledo, O.	Best glove box or case	2 00
Miss Carrie Mosteller, Newark, O.	2d best glove box or case	1 00
Miss Anna Bond, Toledo, O.	Best jewel chest	2 00
J. Campbell Lynas, Columbus, O.	2d best jewel chest	1 00
Miss Anna Bond, Toledo, O.	Best photograph box or case	2 00
Miss Nellie Slegar, Effingham, Ill.	2d best photograph box or case	1 00
Miss Anna Bond, Toledo, O.	Best tankard	2 00
Miss Carrie Mosteller, Newark, O.	2d best tankard	1 00
J. Campbell Lynas, Columbus, O.	Best book rack	2 00
Miss Carrie Mosteller, Newark, O.	2d best book rack	1 00
Charlotte M. Harris, Springfield, O.	Best plaque	2 00
J. Campbell Lynas, Columbus, O.	2d best plaque	1 00
J. Campbell Lynas, Columbus, O.	Best portrait	2 00
Miss Anna Bond, Toledo, O.	2d best portrait	1 00
Miss Mary Scott, Marysville, O.	Best etched ideal head	2 00
J. Campbell Lynas, Columbus, O.	2d best etched ideal head	1 00
Miss Anna Bond, Toledo, O.	Best waste paper box	2 00
Miss Mary Scott, Marysville, O.	2d best waste paper box	1 00
Miss Mary Scott, Marysville, O.	Best dresser box	2 00
Miss Nellie Slegar, Effingham, Ill.	2d best dresser box	1 00
Florence E. Newcomer, Dayton, O.	Best nut bowl	2 00
Miss Eva B. Mosteller, Newark, O.	2d best nut bowl	1 00
J. Campbell Lynas, Columbus, O.	Best pair of ping pong bats	2 00
Miss Anna Bond, Toledo, O.	Best card box	2 00
Miss Anna Bond, Toledo, O.	2d best card box	1 00
Miss Mary Scott, Marysville, O.	Best picture frame	2 00
J. Campbell Lynas, Columbus, O.	2d best picture frame	1 00
Miss Eva B. Mosteller, Newark, O.	Best magazine cover	2 00
Miss Mary Scott, Marysville, O.	2d best magazine cover	1 00
J. Campbell Lynas, Columbus, O.	Best panel	2 00
Miss Anna Bond, Toledo, O.	2d best panel	1 00
Miss Carrie Mosteller, Newark, O.	Best shopping bag	2 00
Miss Anna Bond, Toledo, O.	2d best shopping bag	1 00
Miss Eva B. Mosteller, Newark, O.	Best opera bag	2 00
Miss Mary Scott, Marysville, O.	2d best opera bag	1 00
Miss Carrie Mosteller, Newark, O.	Best pipe rack	2 00
Miss Mary Scott, Marysville, O.	2d best pipe rack	1 00
Jessie F. McClane, Columbus, O.	Best specimen on wood	2 00
J. Campbell Lynas, Columbus, O.	2d best specimen on wood	1 00
Miss Anna Bond, Toledo, O.	Best specimen on leather	2 00
J. Campbell Lynas, Columbus, O.	2d best specimen on leather	1 00
Miss Mary Scott, Marysville, O.	Best specimen on velvet	2 00
Miss Anna Bond, Toledo, O.	2d best specimen on velvet	1 00
Miss Carrie Mosteller, Newark, O.	Best display of not less than five pieces	5 00
Jessie F. McClane, Columbus, O.	2d best display of not less than five pieces	3 00
Decorative Art Work--Amateur.		
Mrs. J. E. Harris, Columbus, O.	Best picture frame	2 00
Mrs. C. F. Young, Clintonville, O.	2d best picture frame	1 00
Miss Carrie Mosteller, Newark, O.	Best plaque	2 00
Laura E. Hunter, Springfield, O.	2d best plaque	1 00
Alice M. Hipple, Delaware, O.	Best book rack	2 00
Miss Eva B. Mosteller, Newark, O.	2d best book rack	1 00
L. V. Johnson, Dayton, O.	Best couch pillow	2 00
Laura E. Hunter, Springfield, O.	2d best couch pillow	1 00
Miss Eva B. Mosteller, Newark, O.	Best handkerchief case or box	2 00
Miss Della Finley, Columbus, O.	2d best handkerchief case or box	1 00
Miss Carrie Mosteller, Newark, O.	Best glove case or box	2 00
Miss Della Finley, Columbus, O.	2d best glove case or box	1 00
Miss Carrie Mosteller, Newark, O.	Best letter case	2 00
L. V. Johnson, Dayton, O.	2d best letter case	1 00
Miss Mary Scott, Marysville, O.	Best jewel case or chest	2 00
Miss Eva B. Mosteller, Newark, O.	2d best jewel case or chest	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
Miss Eva B. Mosteller, Newark, O.	Best card case	$2 00
Miss Anna Bond, Toledo, O.	2d best card case	1 00
Miss Anna Bond, Toledo, O.	Best foot stool	2 00
Miss Carrie Mosteller, Newark, O.	Best book cover	2 00
Miss Anna Bond, Toledo, O.	2d best book cover	1 00
Charlotte M. Harris, Springfield, O.	Best magazine cover	2 00
Miss Carrie Mosteller, Newark, O.	2d best magazine cover	1 00
Miss Julia Gill, Columbus, O.	Best photograph case	2 00
Miss Eva B. Mosteller, Newark, O.	2d best photograph case	1 00
Miss Anna Bond, Columbus, O.	Best blotting pad	2 00
Miss Eva B. Mosteller, Newark, O.	2d best blotting pad	1 00
Miss Carrie Mosteller, Newark, O.	Best opera bag	2 00
Miss Carrie Mosteller, Newark, O.	2d best opera bag	1 00
Fannie Fearn, Groveport, O.	Best shopping bag	2 00
Miss M. Johnson, Dayton, O.	2d best shopping bag	1 00
Art Needle Work—Amateur.		
Mrs. J. E. Harris, Columbus, O.	Best lunch cloth	3 00
Miss Mattie Hall, Lexington, Ky.	2d best lunch cloth	2 00
Mrs. J. E. Harris, Columbus, O.	Best specimen	3 00
Mrs. E. Buck, Lockland, O.	2d best specimen	2 00
Jennie S. Gillett, Columbus, O.	Best table cover (in color)	3 00
Mary V. Smucker, Newark, O.	2d best table cover (in color)	2 00
Miss Mattie Hall, Lexington, Ky.	Best center piece (24 inches)	3 00
Mrs. Sarah McKinley, Columbus, O.	2d best center piece (24 inches)	2 00
Mrs. H. C. Bostwick, Newark, O.	Best fire screen	3 00
Miss Nellie Slegar, Effingham, Ill.	2d best fire screen	2 00
Miss Mattie Hall, Lexington, Ky.	Best handkerchief case	2 00
Mary V. Smucker, Newark, O.	2d best handkerchief case	1 00
Miss Mattie Hall, Lexington, Ky.	Best glove case	2 00
Mrs. Effie Cunningham, Newark, O.	2d best glove case	1 00
Mrs. L. K. Roney, Troy, O.	Best toilet cushion	2 00
Mrs. Effie Cunningham, Newark, O.	2d best toilet cushion	1 00
Miss Anna Bond, Toledo, O.	Best dresser cover	2 00
Mrs. E. Buck, Lockland, O.	2d best dresser cover	1 00
Miss Mattie Hall, Lexington, Ky.	Best tray cloth	2 00
Mrs. J. E. Harris, Columbus, O.	2d best tray cloth	1 00
Miss Mattie Hall, Lexington, Ky.	Best sideboard cover	2 00
Mrs. E. Buck, Lockland, O.	2d best sideboard cover	1 00
Mrs. G. E. Brittain, Dayton, O.	Best center piece (lace and embroidery)	2 00
Mrs. E. Buck, Lockland, O.	2d best center piece (lace and embroidery)	1 00
Mrs. Sarah McKinley, Columbus, O.	Best center piece (18 inches)	2 00
Mrs. Sarah McKinley, Columbus, O.	2d best center piece (18 inches)	1 00
Miss Anna Bond, Toledo, O.	Best table cover	2 00
Miss Nellie Slegar, Effingham, Ill.	2d best table cover	1 00
Miss Mattie Hall, Lexington, Ky.	Best six 12-inch doylies	2 00
Mrs. Sarah McKinley, Columbus, O.	2d best six 12-inch doylies	1 00
Miss Mattie Hall, Lexington, Ky.	Best three cake doylies	2 00
Mrs. J. E. Harris, Columbus, O.	2d best three cake doylies	1 00
Mrs. Effie Cunningham, Newark, O.	Best book cover	2 00
Miss Anna Bond, Toledo, O.	2d best book cover	1 00
Mrs. Effie Cunningham, Newark, O.	Best magazine cover	2 00
Miss Anna Bond, Toledo, O.	2d best magazine cover	1 00
Mrs. Effie Cunningham, Newark, O.	Best party bag	2 00
Mrs. J. E. Harris, Columbus, O.	2d best party bag	1 00
Mrs. J. E. Harris, Columbus, O.	Best shopping bag	3 00
Miss Mary Scott, Marysville, O.	2d best shopping bag	1 00
Mrs. Effie Cunningham, Newark, O.	Best Ottoman	2 00
Miss Anna Bond, Toledo, O.	2d best Ottoman	1 00
Miss Anna Bond, Toledo, O.	Best four doylies (four kinds embroidery)	2 00
Miss Nellie Slegar, Effingham, Ill.	2d best four doylies (four kinds embroidery)	1 00
Miss M. Johnson, Dayton, O.	Best specimen Bulgarian	2 00
L. V. Johnson, Dayton, O.	2d best specimen Bulgarian	1 00
Miss Nellie Slegar, Effingham, Ill.	Best specimen Colonial	2 00
Miss Mary Scott, Marysville, O.	2d best specimen Colonial	1 00
Mrs. J. E. Harris, Columbus, O.	Best specimen Peruvian	2 00
Miss M. Johnson, Dayton, O.	2d best specimen Peruvian	1 00
Miss L. P. Warman, Norwood, O.	Best specimen Mountmellick	2 00
Mrs. H. C. Bostwick, Newark, O.	Best specimen Florentine	2 00
Miss Mary Scott, Marysville, O.	Best specimen Kasara	2 00
Fannie Fearn, Groveport, O.	Best sofa pillow	2 00
Mrs. E. A. Mullen, Marysville, O.	2d best sofa pillow	1 00

WOMAN'S WORK—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
Miss Nellie Slegar, Effingham, Ill	Best waist	$2 00
Miss Anna Bond, Toledo, O	2d best waist	1 00
Mrs. G. E. Brittain, Dayton, O	Best six collars	2 00
Mrs. E. A. Mullen, Marysville, O	Best stock	2 00
Jennie S. Gillett, Columbus, O	Best shirtwaist set	2 00
Miss Nellie Slegar, Effingham, Ill	2d best shirtwaist set	1 00
Mrs. C. M. Nichols, Columbus, O	Best stockings	2 00
Mrs. H. C. Bostwick, Newark, O	2d best stockings	1 00
Mrs. J. E. Harris, Columbus, O	Best display of art needle work	10 00
Mrs. C. F. Young, Clintonville, O	2d best display of art needle work	5 00
Art Needle Work—Professional.		
Miss Della Finley, Columbus, O	Best single specimen	5 00
Martha E. Coleman, Columbus, O	2d best single specimen	3 00
Miss Della Finley, Columbus, O	Best display of eight pieces	10 00
Martha E. Coleman, Columbus, O	2d best display of eight pieces	5 00
Pyrography—Professional.		
Paul Frankenberg, Columbus, O	Best specimen	7 00
Miss Maud Groff, Columbus, O	2d best specimen	5 00
Miss Nellie Slegar, Effingham, Ill	Best chair	5 00
Miss Mary Scott, Marysville, O	2d best chair	3 00
Miss Maud Groff, Columbus, O	Best display	10 00
Miss Nellie Slegar, Effingham, Ill	2d best display	5 00
China Painting—Amateur.		
Elizabeth Whissel, Columbus, O	Best chocolate set	3 00
D. E. Whitsit, Columbus, O	2d best chocolate set	1 00
D. E. Whitsit, Columbus, O	Best six small plates	3 00
Grace Guthridge, Columbus, O	2d best six small plates	1 00
D. E. Whitsit, Columbus, O	Best six large plates	3 00
Elizabeth Whissel, Columbus, O	2d best six large plates	1 00
Grace Guthridge, Columbus, O	Best six cups and saucers	2 00
Mrs. G. E. Brittain, Dayton, O	2d best six cups and saucers	1 00
Mrs. G. E. Brittain, Dayton, O	Best tea pot, sugar and creamer	2 00
Mary Ellen Sharpless, Marion, O	2d best tea pot, sugar and creamer	1 00
Mrs. F. C. Medick, Columbus, O	Best specimen of figure	2 00
Edna A. Watson, Columbus, O	2d best specimen of figure	1 00
Mrs. C. P. Sager, Troy, O	Best vase	2 00
Elizabeth Whissel, Columbus, O	2d best vase	1 00
Mrs. G. E. Brittain, Dayton, O	Best tankard or claret pitcher and mug	2 00
Mrs. C. P. Sager, Troy, O	2d best tankard or claret pitcher and mug	1 00
D. E. Whitsit, Columbus, O	Best jardiniere	2 00
Geo. S. Hyde, Piqua, O	2d best jardiniere	1 00
Grace Guthridge, Columbus, O	Best plaque	2 00
Mrs. F. C. Medick, Columbus, O	2d best plaque	1 00
Edna A. Watson, Columbus, O	Best specimen of china painting	2 00
Mrs. C. P. Sager, Troy, O	2d best specimen of china painting	1 00
Grace Guthridge, Columbus, O	Best specimen of paste work	2 00
Geo. S. Hyde, Piqua, O	2d best specimen of paste work	1 00
Mrs. F. C. Medick, Columbus, O	Best salad dish	2 00
D. E. Whitsit, Columbus, O	2d best salad dish	1 00
Grace Guthridge, Columbus, O	Best cake plate	2 00
Elizabeth Leigh, Groveport, O	2d best cake plate	1 00
Geo. S. Hyde, Piqua, O	Best tray	2 00
D. E. Whitsit, Columbus, O	2d best tray	1 00
Grace Guthridge, Columbus, O	Best display of china painting	7 00
D. E. Whitsit, Columbus, O	2d best display of china painting	4 00
China Painting—Professional (Other Than Figure Work).		
Mrs. E. L. Jenkins, Columbus, O	Best lemonade pitcher	3 00
Miss Charlene Erb, Columbus, O	2d best lemonade pitcher	2 00
Lurah C. Davis, Columbus, O	Best panel	3 00
Mrs. E. L. Jenkins, Columbus, O	2d best panel	2 00
Mrs. E. L. Jenkins, Columbus, O	Best plaque	3 00
Lurah C. Davis, Columbus, O	2d best plaque	2 00
Lurah C. Davis, Columbus, O	Best table top	3 00
Mrs. M. E. Wiltberger, Columbus, O	2d best table top	2 00
Miss Charlene Erb, Columbus, O	Best conventional design	3 00
Lurah C. Davis, Columbus, O	2d best conventional design	2 00

WOMAN'S WORK—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amt.
Mrs. M. E. Wiltberger, Columbus, O......	Best tankard or claret pitcher and mug	$3 00
Mrs. L. K. Roney, Troy, O..................	2d best tankard or claret pitcher and mug	2 00
Mrs. M. E. Wiltberger, Columbus, O.......	Best punch bowl	3 00
Miss Charlene Erb, Columbus, O........	2d best punch bowl..........................	2 00
Lurah C. Davis, Columbus, O..............	Best vase	3 00
Mrs. E. L. Jenkins, Columbus, O...........	2d best vase	2 00
Miss Charlene Erb, Columbus, O...........	Best six cups and saucers	3 00
Mrs. M. E. Wiltberger, Columbus, O......	2d best six cups and saucers......	2 00
Miss Charlene Erb, Columbus, O..........	Best six large plates	3 00
Mrs. M. E. Wiltberger, Columbus, O.....	2d best six large plates	2 00
Mrs. E. L. Jenkins, Columbus, O..........	Best six small plates	3 00
Miss Charlene Erb, Columbus, O..........	2d best six small plates	2 00
Florence E. Newcomer, Dayton, O........	Best specimen enamel work........	3 00
Lurah C. Davis, Columbus, O..............	2d best specimen enamel work......	2 00
Lurah C. Davis, Columbus, O..............	Best specimen paste work	3 00
Miss Charlene Erb, Columbus, O.........	2d best specimen paste work........	2 00
Mrs. E. L. Jenkins, Columbus, O.........	Best jardiniere	3 00
Mrs. L. K. Roney, Troy, O..................	2d best jardiniere..................	2 00
Mrs. M. E. Wiltberger, Columbus, O......	Best display of china painting	10 00
Miss Charlene Erb, Columbus, O.........	2d best display of china painting....	5 00
China Painting—Professional (Figure Work).		
Florence E. Newcomer, Dayton, O.........	Best portrait	3 00
Mrs. M. E. Sharpless, Marion, O..........	2d best portrait..........................	2 00
Mrs. L. K. Roney, Troy, O..................	Best figure	3 00
Mrs. H. W. Barnitz, Urbana, O............	2d best figure..........................	2 00
Florence E. Newcomer, Dayton, O.........	Best plaque	3 00
Mrs. L. K. Roney, Troy, O..................	2d best plaque	2 00
Florence E. Newcomer, Dayton, O.........	Best panel	3 00
Mrs. L. K. Roney, Troy, O..............	2d best panel..........................	2 00
Florence E. Newcomer, Dayton, O.........	Best vase	3 00
Mrs. L. K. Roney, Troy, O..............	2d best vase	2 00
Florence E. Newcomer, Dayton, O.........	Best tankard	3 00
Florence E. Newcomer, Dayton, O.........	Best stein	3 00
Florence E. Newcomer, Dayton, O.........	Best miniature	3 00
Mrs. H. W. Barnitz, Urbana, O............	2d best miniature..........................	2 00
Florence E. Newcomer, Dayton, O.........	Best display of china painting.....	10 00

PRESERVES, PICKLES, ETC.

Owner's Name and Postoffice.	Name of Article.	Amt.
Preserves, Pickles, Etc.		
Mrs. W. B. Clutter, Pataskala, O.........	Best canned tomatoes	$1 00
Mrs. M. Rinehart, Marion, O.............	2d best canned tomatoes	50
Mrs. M. B. Clutter, Pataskala, O.........	Best canned blackberries	1 00
Mrs. O. C. Stockman, Prospect, O........	2d best canned blackberries	50
Mrs. M. B. Clutter, Pataskala, O.........	Best canned raspberries	1 00
Mrs. E. A. Trout, Centerburg, O..........	2d best canned raspberries	50
Mrs. M. B. Clutter, Pataskala, O..........	Best canned peaches	1 00
Mrs. C. Doughtv, Kirkpatrick, O...........	2d best canned peaches	50
Mrs. M. B. Clutter, Pataskala, O..........	Best canned pears	1 00
Mrs. E. A. Trout, Centerburg, O...........	2d best canned pears	50
Mrs. M. B. Clutter, Patasakla, O...........	Best canned apples	1 00
Mrs. Henry Bieber, Delaware, O...........	2d best canned apples	50
Mrs. M. B. Clutter, Pataskala, O..........	Best canned quinces	1 00
Mrs. Henry Bieber, Delaware, O...........	2d best canned quinces	50
Mrs. M. B. Clutter, Pataskala, O..........	Best canned strawberries	1 00
Mrs. L. Trimble, Marion, O...............	2d best canned strawberries	50
Mrs. M. B. Clutter, Pataskala, O..........	Best canned cherries	1 00
Mrs. E. A. Trout, Centerburg, O...........	2d best canned cherries	50
Mrs. M. B. Clutter, Pataskala, O..........	Best canned gooseberries	1 00
Mrs. L. Trimble, Marion, O...............	2d best canned gooseberries	50
Mrs. M. B. Clutter, Pataskala, O..........	Best canned currants	1 00
Mrs. M. Rinehart, Marion, O................	2d best canned currants	50

PRESERVES, PICKLES, ETC.—Continued.

Owner's Name and Postoffice.	Name of Article.	Amt.
Susie E. Perry, Columbus, O.	Best canned grapes	$1 00
Mrs. M. Rinehart, Marion, O.	2d best canned grapes	50
Mrs. C. Doughty, Kirkpatrick, O.	Best canned plums	1 00
Mrs. M. B. Clutter, Pataskala, O.	2d best canned plums	50
Mrs. M. Rinehart, Marion, O.	Best canned pears	1 00
Mrs. M. B. Clutter, Pataskala, O.	2d best canned pears	50
Mrs. M. B. Clutter, Pataskala, O.	Best canned beans	1 00
Mary Stewart, Jacksontown, O.	2d best canned beans	50
Mrs. M. B. Clutter, Pataskala, O.	Best canned rhubarb	1 00
Mrs. M. Rinehart, Marion, O.	2d best canned rhubarb	50
Mrs. M. B. Clutter, Pataskala, O.	Best canned corn, on ear or otherwise	1 00
Mrs. L. A. Gregg, Washington C. H., O.	Best blackberry jelly	1 00
Mrs. M. B. Clutter, Pataskala, O.	2d best blackberry jelly	50
Mrs. Henry Bieber, Delaware, O.	Best cherry jelly	1 00
Mrs. L. Trimble, Marion, O.	2d best cherry jelly	50
Mrs. M. B. Clutter, Pataskala, O.	Best cranberry jelly	1 00
Mrs. L. Trimble, Marion, O.	2d best cranberry jelly	50
Mrs. Henry Bieber, Delaware, O.	Best grape jelly	1 00
Mary Stewart, Jacksontown, O.	2d best grape jelly	50
Mrs. L. Trimble, Marion, O.	Best raspberry jelly	1 00
Mrs. Henry Bieber, Delaware, O.	2d best raspberry jelly	50
Mrs. M. B. Clutter, Pataskala, O.	Best strawberry jelly	1 00
Mrs. Henry Bieber, Delaware, O.	2d best strawberry jelly	50
Mrs. Henry Bieber, Delaware, O.	Best apple jelly	1 00
Mrs. M. B. Clutter, Pataskala, O.	2d best apple jelly	50
Mary Stewart, Jacksontown, O.	Best pear jelly	1 00
Mrs. J. B. Stewart, Thornville, O.	2d best pear jelly	50
Susie E. Perry, Columbus, O.	Best crab apple jelly	1 00
Mrs. Henry Bieber, Delaware, O.	2d best crab apple jelly	50
Mrs. Henry Bieber, Delaware, O.	Best currant jelly	1 00
Mrs. L. Trimble, Marion, O.	2d best currant jelly	50
Mrs. Henry Bieber, Delaware, O.	Best peach jelly	1 00
Mrs. L. A. Gregg, Washington C. H., O.	2d best peach jelly	50
Mrs. J. B. Stewart, Thornville, O.	Best quince jelly	1 00
Mary Stewart, Jacksontown, O.	2d best quince jelly	50
Mrs. E. G. Taggart, Delaware, O.	Best plum jelly	1 00
Susie E. Perry, Columbus, O.	2d best plum jelly	50
Mrs. M. B. Clutter, Pataskala, O.	Best lemon jelly	1 00
Mrs. Henry Bieber, Delaware, O.	2d best lemon jelly	50
Mrs. L. A. Gregg, Washington C. H., O.	Best pineapple jelly	1 00
Mary Stewart, Jacksontown, O.	2d best pineapple jelly	50
Mrs. Albert Pearce, North Ridgeville, O.	Best rhubarb jelly	1 00
Mrs. M. B. Clutter, Pataskala, O.	2d best rhubarb jelly	50
Mrs. L. Trimble, Marion, O.	Best gooseberry jelly	1 00
Mrs. M. B. Clutter, Pataskala, O.	2d best gooseberry jelly	50
Miss Minnie Bieber, Delaawre, O.	Best preserved quinces	2 00
Mrs. Henry Bieber, Delaware, O.	2d best preserved quinces	1 00
Mrs. Henry Bieber, Delaware, O.	Best preserved pears	2 00
Miss Minnie Bieber, Delaware, O.	2d best preserved pears	1 00
Mrs. Henry Bieber, Delaware, O.	Best preserved apples	2 00
Miss Minnie Bieber, Delaware, O.	2d best preserved apples	1 00
Susie E. Perry, Columbus, O.	Best preserved plums	2 00
Mrs. M. B. Clutter, Pastakala, O.	2d best preserved plums	1 00
Miss Minnie Bieber, Delaware, O.	Best preserved cherries	2 00
Mrs. M. B. Clutter, Pataskala, O.	2d best preserved cherries	1 00
Mrs. Henry Bieber, Delaware, O.	Best preserved crab apples	2 00
Miss Minnie Bieber, Delaware, O.	2d best preserved crab apples	1 00
Mrs. L. Trimble, Marion, O.	Best preserved grapes	2 00
Mrs. M. B. Clutter, Pataskala, O.	2d best preserved grapes	1 00
Mrs. J. B. Stewart, Thornville, O.	Best preserved strawberries	2 00
Mrs. M. B. Clutter, Pataskala, O.	2d best preserved strawberries	1 00
Mrs. E. G. Taggart, Delaware, O.	Best preserved blackberries	2 00
Mary Stewart, Jacksontown, O.	2d best preserved blackberries	1 00
Mrs. Henry Bieber, Delaware, O.	Best preserved peaches	2 00
Miss Minnie Bieber, Delaware, O.	2d best preserved peaches	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best preserved currants	2 00
Mrs. L. Trimble, Marion, O.	2d best preserved currants	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best preserved gooseberries	2 00
Mrs. E. G. Taggart, Delaware, O.	Best preserved melons	2 00
Mrs. M. B. Clutter, Pataskala, O.	2d best preserved melons	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best preserved pineapples	2 00
Mrs. L. Trimble, Marion, O.	2d best preserved pineapples	1 00
Mary Stewart, Jacksontown, O.	Best preserved cranberries	2 00
Mrs. M. B. Clutter, Pataskala, O.	2d best preserved cranberries	1 00
Mrs. Jennie Cherry, Newark, O.	Best pickled cucumbers	2 00
Mrs. C. Doughty, Kirkpatrick, O.	2d best pickled cucumbers	1 00
Ms. Henry Bieber, Delaware, O.	Best pickled peaches	2 00
Mrs. E. G. Taggart, Delaware, O.	2d best pickled peaches	1 00

PRESERVES, PICKLES, ETC—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amt.
Mrs. Henry Bieber, Delaware, O.	Best pickled pears	$2 00
Mrs. M. B. Clutter, Pataskala, O.	2d best pickled pears	1 00
Mary Stewart, Jacksontown, O.	Best pickled tomatoes	2 00
Mrs. Henry Bieber, Delaware, O.	2d best pickled tomatoes	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best pickled melon mangoes	2 00
Mrs. Henry Bieber, Delaware, O.	2d best pickled melon mangoes	1 00
Mary Stewart, Jacksontown, O.	Best pickled pepper mangoes	2 00
Mrs. Henry Bieber, Delaware, O.	2d best pickled pepper mangoes	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best pickled melons	2 00
Mrs. E. G. Taggart, Delaware, O.	2d best pickled melons	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best pickled onions	2 00
Mrs. M. Rinehart, Marion, O.	2d best pickled onions	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best pickled gherkins	2 00
Mrs. L. Trimble, Marion, O.	2d best pickled gherkins	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best pickled cauliflower	2 00
Mrs. E. G. Taggart, Delaware, O.	2d best pickled cauliflower	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best mixed pickles	2 00
Mrs. C. Doughty, Kirkpatrick, O.	2d best mixed pickles	1 00
Mary Stewart, Jacksontown, O.	Best tomato catsup	2 00
Mrs. Henry Bieber, Delaware, O.	2d best tomato catsup	1 00
Mrs. H. E. Stein, Columbus, O.	Best cucumber catsup	2 00
Mrs. E. G. Taggart, Delaware, O.	2d best cucumber catsup	1 00
Mrs. Jennie Cherry, Newark, O.	Best cold tomato catsup	2 00
Mrs. Henry Bieber, Delaware, O.	2d best cold tomato catsup	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best chili sauce	2 00
Mrs. E. G. Taggart, Delaware, O.	2d best chili sauce	1 00
Mrs. Henry Bieber, Delaware, O.	Best chowchow	2 00
Mrs. Jennie Cherry, Newark, O.	2d best chowchow	1 00
Mary Stewart, Jacksontown, O.	Best cucumber relish	1 00
Mrs. Henry Bieber, Delaware, O.	2d best cucumber relish	50
Miss Minnie Bieber, Delaware, O.	Best peach butter	2 00
Mrs. C. Doughty, Kirkpatrick, O.	2d best peach butter	1 00
Mrs. C. Doughty, Kirkpatrick, O.	Best apple butter	2 00
Mrs. M. B. Clutter, Pataskala, O.	2d best apple butter	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best quince butter	2 00
Mrs. Henry Bieber, Delaware, O.	2d best quince butter	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best plum butter	2 00
Mrs. Henry Bieber, Delaware, O.	2d best plum butter	1 00
Mrs. C. Doughty, Kirkpatrick, O.	Best pear butter	2 00
Mrs. Henry Bieber, Delaware, O.	2d best pear butter	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best grape butter	2 00
Susie E. Perry, Columbus, O.	2d best grape butter	1 00
Mrs. Henry Bieber, Delaware, O.	Best peach marmalade	2 00
Mrs. J. B. Stewart, Thornville, O.	2d best peach marmalade	1 00
Mrs. E. G. Taggart, Delaware, O.	Best quince marmalade	2 00
Mrs. Henry Bieber, Delaware, O.	2d best quince marmalade	1 00
Mrs. C. Doughty, Kirkpatrick, O.	Best crab apple marmalade	2 00
Mrs. Henry Bieber, Delaware, O.	2d best crab apple marmalade	1 00
Mrs. Henry Bieber, Delaware, O.	Best orange marmalade	2 00
Miss Minnie Bieber, Delaware, O.	2d best orange marmalade	1 00
Mrs. Henry Bieber, Delaware, O.	Best pear marmalade	2 00
Mrs. E. G. Taggart, Delaware, O.	2d best pear marmalade	1 00
Mrs. M. B. Clutter, Patasakla, O.	Best and largest variety of canned fruit	5 00
Mrs. L. Trimble, Marion, O.	2d best and largest variety of canned fruit	3 00
Mrs. M. B. Clutter, Pataskala, O.	Best and largest variety pickles	5 00
Mrs. L. Trimble, Marion, O.	2d best and largest variety pickles	3 00
Mrs. M. B. Clutter, Pataskala, O.	Best and largest variety jellies	5 00
Mrs. L. Trimble, Marion, O.	2d best and largest variety jellies	3 00
Mrs. M. B. Clutter, Pataskala, O.	Best and largest variety of butters	5 00
Mrs. J. B. Stewart, Thornville, O.	2d best and largest variety of butters	3 00
Mrs. J. B. Stewart, Thornville, O.	Best and largest variety of marmalades	5 00
Mrs. M. B. Clutter, Pastakala, O.	2d best and largest variety of marmalades	3 00

NOTE—The premiums in the above class, awarded to Mrs. M. B. Clutter, of Pataskala, O., were forfeited, because of the use of salicylic acid in the preservation cf the articles.

CEREAL FOODS.

Owner's Name and Postoffice.	Name of Article.	Amt.
Bread.		
Mary Stewart, Jacksontown, O.	Best yeast bread	$2 00
Mrs. Joe Merz, Columbus, O.	2d best yeast bread	1 00
Mrs. Jennie Sanders, Columbus, O.	Best salt-rising bread	2 00
Mrs. Jennie Cherry, Columbus, O.	2d best salt-rising bread	1 00
Mrs. Joe Merz, Columbus, O.	Best corn bread	2 00
Mary Stewart, Jacksontown, O.	2d best corn bread	1 00
Mrs. M. B. Cluter, Pataskala, O.	Best rye bread	2 00
Mary Stewart, Jacksontown, O.	2d best rye bread	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best brown bread	2 00
Mary Stewart, Jacksontown, O.	2d best brown bread	1 00
Loaf Cakes.		
Mrs. E. G. Taggart, Delaware, O.	Best black fruit	3 00
Mary Stewart, Jacksontown, O.	2d best black fruit	2 00
Mrs. M. B. Clutter, Pataskala, O.	Best white fruit	2 00
Mary Stewart, Jacksontown, O.	2d best white fruit	1 00
Mrs. E. P. Wright, Columbus, O.	Best white	2 00
Mary Stewart, Jacksontown, O.	2d best white	1 00
Mrs. J. H. Hawkins, Xenia, O.	Best marble	2 00
Maria Davis, Westerville, O.	2d best marble	1 00
Mrs. Jennie Cherry, Newark, O.	Best pound	2 00
Mrs. E. G. Taggart, Delaware, O.	Best coffee	2 00
Mary Stewart, Jacksontown, O.	2d best coffee	1 00
Mrs. J. H. Hawkins, Xenia, O.	Best nut	2 00
Mrs. M. B. Clutter, Pataskala, O.	2d best nut	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best angel	2 00
Miss Minnie Bieber, Delaware, O.	Best sponge	2 00
Mary Stewart, Jacksontown, O.	Best sunshine	2 00
Miss Lucy W. Taggart, Delaware, O.	2d best sunshine	1 00
Layer Cakes.		
Miss Minnie Bieber, Delaware, O.	Best chocolate	2 00
Mrs. J. H. Hawkins, Xenia, O.	2d best chocolate	1 00
Mary Stewart, Jacksontown, O.	Best caramel	2 00
Miss Minnie Bieber, Delaware, O.	2d best caramel	1 00
Mary Stewart, Jacksontown, O.	Best cocoanut	2 00
Miss Minnie Bieber, Delaware, O.	2d best cocoanut	1 00
Mrs. J. H. Hawkins, Xenia, O.	Best almond	2 00
Mrs. M. B. Clutter, Pataskala, O.	2d best almond	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best devil	2 00
Mary Stewart, Jacksontown, O.	2d best devil	1 00
Mrs. M. B. Clutter, Pataskala, O.	Best fignut	2 00
Mrs. Jennie Cherry, Newark, O.	2d best fignut	2 00
Mrs. J. H. Hawkins, Xenia, O.	Best ribbon	2 00
Mrs. C. Doughty, Kirkpatrick, O.	2d best ribbon	1 00
Mrs. J. H. Hawkins, Xenia, O.	Best any other kind	2 00
Mrs. C. Doughty, Kirkpatrick, O.	2d best any other kind	1 00
Miscellaneous.		
Miss Minnie Bieber, Delaware, O.	Best one dozen plain snaps	1 00
Mrs. M. B. Clutter, Pataskala, O.	2d best one dozen plain snaps	50
Mrs. C. Doughty, Kirkpatrick, O.	Best one dozen cookies	1 00
Maria Davis, Westerville, O.	2d best one dozen cookies	50
Mrs. M. B. Clutter, Pataskala, O.	Best one dozen doughnuts	1 00
Mrs. J. H. Hawkins, Xenia, O.	2d best one dozen doughnuts	50
Mrs. M. B. Clutter, Pataskala, O.	Best one dozen love pies	1 00
Mrs. Jennie Cherry, Newark, O.	2d best one dozen love pies	50
Mary Stewart, Jacksontown, O.	Best one dozen ginger snaps	1 00
Mrs. M. B. Clutter, Pataskala, O.	2d best one dozen ginger snaps	50
Confections —Home Made.		
Mrs. Jennie Cherry, Newark, O.	Best pound of fudges	1 00
Maria Davis, Westerville, O.	2d best pound of fudges	50
Mrs. M. B. Clutter, Pataskala, O.	Best pound of maple balls	1 00
Mrs. F. J. Bartholomew, Huntsburg, O.	2d best pound of maple balls	50
Mrs. Jennie Cherry, Newark, O.	Best pound of chocolate creams	1 00
Miss Minnie Bieber, Delaware, O.	2d best pound of chocolate creams	50
Mrs. Jennie Cherry, Newark, O.	Best pound of nut candy	1 00
Mrs. M. B. Clutter, Pataskala, O.	2d best pound of nut candy	50
Mrs. M. B. Clutter, Pataskala, O.	Best pound of taffy	1 00
Maria Davis, Westerville, O.	2d best pound of taffy	50

CEREAL FOODS—Concluded.

Owner's Name and Postoffice.	Name of Article.	Amt.
Mrs. Jennie Cherry, Newark, O...........	Best pound of chocolate caramels....	$1 00
Mrs. M. B. Clutter, Pataskala, O............	2d best pound of chocolate caramels	50
Mrs. M. B. Clutter, Pataskala, O.........	Best pound of candied lemon or orange peel	1 00
Mrs. Jennie Cherry, Newark, O...........	2d best pound of candied lemon or orange peel	50
Mrs. Jennie Cherry, Newark, O............	Best pound of almond macaroons..	1 00
Miss Minnie Bieber, Delaware, O..........	2d best pound of almond macaroons	50
Miss Minnie Bieber, Delaware, O..........	Best pound of hickory nut macaroons	1 00
Mrs. M. B. Clutter, Pataskala, O...........	2d best pound of hickory nut macaroons	50

TWELFTH DEPARTMENT—FINE ARTS.

Samuel Taylor, Member in Charge.

PAINTINGS, DRAWINGS, ETC.

Original Productions—Open to All.

Owner's Name and Postoffice.	Name of Article.	Amt.
Oil Paintings.		
Mathias Alten, Grand Rapids, Mich........	Best portrait	$8 00
H. W. Barnitz, Urbana, O..................	2d best portrait	4 00
W. J. Norris, Columbus, O..................	Best animal study	8 00
Sam Kiefer, Columbus, O....................	2d best animal study	4 00
Mathias Alten, Grand Rapids, Mich........	Best full length figure	5 00
H. W. Barnitz, Urbana, O..................	2d best full length figure	3 00
Sam Kiefer, Columbus, O....................	Best landscape	5 00
Miss Maude Myers, Columbus, O..........	2d best landscape	3 00
Miss Maude Myers, Columbus, O..........	Best fruit piece	5 00
H. W. Barnitz, Urbana, O..................	2d best fruit piece	3 00
Mathias Alten, Grand Rapids, Mich........	Best flower piece	5 00
Miss Maude Myers, Columbus, O..........	2d best flower piece	3 00
Geo. W. Bellows, Columbus, O.............	Best still life study	5 00
Mathias Alten, Grand Rapids, Mich........	2d best still life study	3 00
Fritz Warnecker, Columbus, O............	Best exhibition of oil paintings....	15 00
H. W. Barnitz, Urbana, O..................	2d best exhibition of oil paintings....	5 00
Water Color Paintings.		
Mathias Alten, Grand Rapids, Mich......	Best portrait	5 00
H. W. Barnitz, Urbana, O..................	2d best portrait	3 00
W. J. Norris, Columbus, O..................	Best full length figure	4 00
H. W. Barnitz, Urbana, O..................	2d best full length figure	2 00
H. W. Barnitz, Urbana, O..................	Best landscape	4 00
W. J. Norris, Columbus, O..................	2d best landscape	2 00
Mathias Alten, Grand Rapids, Mich........	Best fruit piece	4 00
H. W. Barnitz, Urbana, O..................	2d best fruit piece	2 00
Mrs. L. K. Roney, Troy, O..................	Best flower piece	4 00
Mrs. E. L. Jenkins, Columbus, O.........	2d best flower piece	2 00
H. W. Barnitz, Urbana, O..................	Best marine study	4 00
Mrs. Lynn Hays, Springfield, O............	2d best marine study	2 00
H. W. Barnitz, Urbana, O..................	Best still life study	4 00
Miss Daisy M. Scott, Columbus, O.........	2d best still life study................	2 00
Mrs. E. L. Jenkins, Columbus, O.........	Best exhibition of paintings, water colors	10 00
H. W. Barnitz, Urbana, O..................	2d best exhibition of paintings, water colors	5 00

PAINTINGS, DRAWINGS, ETC—Continued.

Open to All.

Owner's Name and Postoffice.	Name of Article.	Amt.
Pastels.		
H. W. Barnitz, Urbana, O.	Best portrait	$3 00
Mrs. Lynn Hays, Springfield, O.	2d best portrait	2 00
Mathias Alten, Grand Rapids, Mich.	Best landscape	3 00
Miss Eva B. Mosteller, Newark, O.	2d best landscape	2 00
Miss Minnie Russell, Springfield, O.	Best animal	3 00
Mathias Alten, Grand Rapids, Mich.	2d best animal	2 00
H. W. Barnitz, Urbana, O.	Best game	3 00
Mathias Alten, Grand Rapids, Mich.	Best fruit	3 00
H. W. Barnitz, Urbana, O.	2d best fruit	2 00
Miss Maude Myers, Columbus, O.	Best still life	3 00
H. W. Barnitz, Urbana, O.	2d best still life	2 00
Mathias Alten, Grand Rapids, Mich.	Best figure	3 00
Miss Maude Myers, Columbus, O.	2d best figure	2 00
Drawings.		
Mathias Alten, Grand Rapids, Mich.	Best portrait, crayon or charcoal	2 00
Miss Maude Myers, Columbus, O.	2d best portrait, crayon or charcoal	1 00
Mathias Alten, Grand Rapids, Mich.	Best landscape, crayon or charcoal	2 00
Miss Maude Myers, Columbus, O.	2d best landscape, crayon or charcoal	1 00
Miss Maude Myers, Columbus, O.	Best still life, crayon or charcoal	2 00
H. W. Barnitz, Urbana, O.	2d best still life, crayon or charcoal	1 00
Mathias Alten, Grand Rapids, Mich.	Best pen and ink drawing, full length	2 00
Geo. W. Bellows, Columbus, O.	2d best pen and ink drawing	1 00
Geo. W. Bellows, Columbus, O.	Best pen and ink drawing, still life	2 00
H. W. Barnitz, Urbana, O.	2d best pen and ink drawing, still life	1 00
H. W. Barnitz, Urbana, O.	Best pencil drawing, still life	2 00
H. W. Barnitz, Urbana, O.	Best pencil drawing, from figure	2 00
Mathias Alten, Grand Rapids, Mich.	2d best pencil drawing, from figure	1 00

PAINTINGS, DRAWINGS, ETC.

OPEN TO AMATEURS ONLY.

Owner's Name and Postoffice.	Name of Article.	Amt.
Oil Paintings.		
Miss N. E. Ziegler, Columbus, O.	Best portrait	$5 00
Earle B. McKinney, Columbus, O.	2d best portrait	3 00
Laura E. Hunter, Springfield, O.	Best full length figure	3 00
Earle B. McKinney, Columbus, O.	2d best full length figure	1 00
Miss M. Johnson, Dayton, O.	Best animal study	3 00
Laura E. Hunter, Springfield, O.	2d best animal study	1 00
Miss N. E. Ziegler, Columbus, O.	Best landscape	3 00
George Greener, Columbus, O.	2d best landscape	1 00
Miss N. E. Ziegler, Columbus, O.	Best fruit piece	3 00
Laura E. Hunter, Springfield, O.	2d best fruit piece	1 00
Miss N. E. Ziegler, Columbus, O.	Best flower piece	3 00
Earle B. McKinney, Columbus, O.	2d best flower piece	1 00
Miss N. E. Ziegler, Columbus, O.	Best still life study	3 00
Mrs. Henry Bradford, Columbus, O.	2d best still life study	1 00
Miss N. E. Ziegler, Columbus, O.	Best exhibition of oil paintings	10 00
Earle B. McKinney, Columbus, O.	2d best exhibition of oil paintings	5 00
Water Color Paintings.		
L. M. Roulette, Columbus, O.	Best portrait	4 00
Miss N. E. Ziegler, Columbus, O.	2d best portrait	2 00
Miss N. E. Ziegler, Columbus, O.	Best full length figure	3 00
Alice M. Hipple, Delaware, O.	2d best full length figure	1 00
Geo. S. Hyde, Piqua, O.	Best Ohio landscape	3 00
Miss Carrie Mosteller, Newark, O.	2d best Ohio landscape	1 00
Miss Carrie Mosteller, Newark, O.	Best landscape (summer study)	3 00
Laura E. Hunter, Springfield, O.	2d best landscape (summer study)	1 00
Miss N. E. Ziegler, Columbus, O.	Best flower piece	3 00
Geo. S. Hyde, Piqua, O.	2d best flower piece	1 00
Miss Carrie Mosteller, Newark, O.	Best fruit piece	3 00
Earle B. McKinney, Columbus, O.	2d best fruit piece	1 00

PAINTINGS, DRAWINGS, ETC.—Continued.
Open to Amateurs Only.

Owner's Name and Postoffice.	Name of Article.	Amt.
Miss M. Johnson, Dayton, O.	Best marine study	$3 00
Miss Carrie Mosteller, Newark, O.	2d best marine study	1 00
Earle B. McKinney, Columbus, O.	Best still life study	3 00
Miss N. E. Ziegler, Columbus, O.	2d best still life study	1 00
Miss N. E. Ziegler, Columbus, O.	Best exhibition of paintings, water colors	8 00
Earle B. McKinney, Columbus, O.	2d best exhibition of paintings, water colors	4 00
Pastels.		
Miss N. E. Ziegler, Columbus, O.	Best portrait	3 00
Mary Savage, Columbus, O.	2d best portrait	2 00
Geo. S. Hyde, Piqua, O.	Best landscape	2 00
Miss Eva B. Mosteller, Newark, O.	2d best landscape	1 00
Elizabeth McMullen, Columbus, O.	Best animal	2 00
Miss Carrie Mosteller, Newark, O.	2d best animal	1 00
Mrs. G. E. Brittain, Dayton, O.	Best game	2 00
Miss Carrie Mosteller, Newark, O.	Best fruit	2 00
Geo. S. Hyde, Piqua, O.	2d best fruit	1 00
Miss Carrie Mosteller, Newark, O.	Best still life	2 00
Mrs. G. E. Brittain, Dayton, O.	2d best still life	1 00
Miss N. E. Ziegler, Columbus, O.	Best figure	2 00
Geo. S. Hyde, Piqua, O.	2d best figure	1 00
Miss Carrie Mosteller, Newark, O.	Best autumn landscape	2 00
Geo. S. Hyde, Piqua, O.	2d best autumn landscape	1 00
Drawings.		
Miss N. E. Ziegler, Columbus, O.	Best portrait, crayon or charcoal	2 00
Annie Scott, Columbus, O.	2d best portrait, crayon or charcoal	1 00
Miss Carrie Mosteller, Newark, O.	Best landscape, crayon or charcoal	2 00
Laura E. Hunter, Springfield, O.	2d best landscape, crayon or charcoal	1 00
Annie Scott, Columbus, O.	Best still life, crayon or charcoal	2 00
Laura E. Hunter, Springfield, O.	2d best still life, crayon or charcoal	1 00
Laura E. Hunter, Springfield, O.	Best drawing from cast, crayon or charcoal	2 00
Earle B. McKinney, Columbus, O.	2d best drawing from cast, crayon or charcoal	1 00
George Greener, Columbus, O.	Best pen and ink drawing, full length figure	2 00
Earle B. McKinney, Columbus, O.	2d best pen and ink drawing, full length figure	1 00
Earle B. McKinney, Columbus, O.	Best pen and ink drawing, still life	2 00
Laura E. Hunter, Springfield, O.	2d best pen and ink drawing, still life	1 00
Earle B. McKinney, Columbus, O.	Best pen and ink landscape	2 00
Mrs. G. E. Brittain, Dayton, O.	2d best pen and ink landscape	1 00
Miss Carrie Mosteller, Newark, O.	Best pencil drawing, still life	2 00
Laura E. Hunter, Springfield, O.	2d best pencil drawing, still life	1 00
Charlotte M. Harris, Springfield, O.	Best pencil drawing, flower piece	2 00
Laura E. Hunter, Springfield, O.	2d best pencil drawing, flower piece	1 00
Miss N. E. Ziegler, Columbus, O.	Best pencil drawing, from figure	2 00
Miss N. E. Ziegler, Columbus, O.	2d best pencil drawing, from figure	1 00
Miss Minnie Fry, Columbus, O.	2d best pencil drawing, from cast	1 00
Earle B. McKinney, Columbus, O.	Best architectural drawings	2 00
Miss N. E. Ziegler, Columbus, O.	Best display of drawings, in pencil, charcoal, crayon or brush	4 00
Earle B. McKinney, Columbus, O.	2d best display of drawings, in pencil, charcoal, crayon or brush.	2 00
Wood Carving.		
Hazel Lewis, Columbus, O.	Best display	8 00
Alice M. Hipple, Delaware, O.	2d best display	3 00
Photography.		
G. C. Hipple, Delaware, O.	Best landscape, two prints 5 x 7	2 00
James E. Taggart, Delaware, O.	2d best landscape, two prints 5 x 7	1 00
James E. Taggart, Delaware, O.	Best animal, two prints 5 x 7	2 00
G. C. Hipple, Delaware, O.	2d best animal, two prints 5 x 7	1 00
James E. Taggart, Delaware, O.	Best composition, two prints 5 x 7	2 00
Alice M. Hipple, Delaware, O.	2d best composition, two prints 5 x 7	1 00
Alice M. Hipple, Delaware, O.	Best landscape, two prints 4 x 5	2 00
G. C. Hipple, Delaware, O.	2d best landscape, two prints 4 x 5.	1 00
James E. Taggart, Delaware, O.	Best animal, two prints 4 x 5	2 00
Elizabeth Leigh, Groveport, O.	2d best animal, two prints 4 x 5	1 00

PAINTINGS, DRAWINGS, ETC—Concluded.

Open to Amateurs only.

Owner's Name and Postoffice.	Name of Article.	Amt.
G. C. Hipple, Delaware, O.	Best composition, two prints 4 x 5	$2 00
Alice M. Hipple, Delaware, O.	2d best composition, two prints 4 x 5	1 00
James E. Taggart, Delaware, O.	Best six prints 3½ x 3½	2 00
Mrs. H. C. Bostwick, Newark, O.	2d best six prints 3½ x 3½	1 00
James E. Taggart, Delaware, O.	Best portrait any size	2 00
G. C. Hipple, Delaware, O.	2d best portrait any size	1 00
Mrs. H. C. Bostwick, Newark, O.	Best harvest scene, any size	2 00
G. C. Hipple, Delaware, O.	2d best harvest scene, any size	1 00
G. C. Hipple, Delaware, O.	Best display of five prints, 4 x 5 or larger	4 00
James E. Taggart, Delaware, O.	2d best display of five prints, 4 x 5 or larger	2 00

EXHIBITS IN NON-PREMIUM DEPARTMENTS.

AGRICULTURAL IMPLEMENTS AND MACHINERY.

R. O. HINSDALE, Member in Charge.

Adams, J. D. & Co., Indianapolis, Ind	Road graders.
Akron Cultivator Co., Akron, O	Cultivators and harrows.
Altman Co., Canton, O	Engine and corn husker.
Althaus, Ewing & Co., Bluffton, O	Grain separator.
American Grass Twine Co., St. Paul, Minn	Binder, mower, hay rake and grass twine.
American Harrow Co., Detroit, Mich	Manure spreader, harrows and cultivators.
American Steel Wire Co., Chicago, Ill	Lawn and poultry fencing and gates.
Anthony Fence Co., Tecumseh, Mich	Farm fence.
Appleton Manufacturing Co., Batavia, Ill	Shredders, fodder cutters, corn shellers, feed and wind mills.
Ash, Harber Co., Lyons, Mich	Gasoline engine.
Avery Manufacturing Co., Columbus, O	Cultivators, corn planters and fodder cutters.
Baley Wire Fence Co., Sandusky, O	Farm fence.
Baker, A. D., Co., Swanton, O	Traction engines, corn husker and separator.
Bateman Manufacturing Co., Greenlock, N.Y.	Cultivators, potato planters and garden seed drills.
Bayless, Frank, Springfield, O	Automatic railroad switch.
Banting Machine Supply Co., Toledo, O	Hay loaders, tedders, rakes, harrows, cultivators and feed grinders.
Bauroth Bros., Springfield, O	Gasoline engines.

Baulton, O. T., Covington, O.	Stock scales.
Bennett, H. L. & Co., Westerville, O.	Stump puller, tile ditching machine, wagons and corn harvesters.
Bidwell, Walter, Plain City, O.	Novelty hog catcher and holder.
Bickford & Hoffman, Macedon, N. Y.	Farmers' favorite grain drills.
Beech Manufacturing Co., Lyons, Mich.	Culverts.
Bicycle Plow Co., Jackson, Ohio	Bicycle garden plow.
Bline, J. T., Vanatta, O.	Neck yoke.
Blackburn & Timberr, Springfield, O.	Oil stove.
Brunner Manufacturing Co., Buckland, O.	Steel wagon with extra wheels.
Brown Manufacturing Co., Zanesville, O.	Wagons, cultivators and drags.
Brown-Manly Plow Co., Malta, O.	Cultivators, plows, harrows and push carts.
Buchs, A. & Sons., Elizabethtown, Pa.	Corn shellers, lawn swings, land rollers and troughs.
Burke Bollmeyer, Wauseon, O.	Wind mills, pumps and tanks.
Buckeye Fertilizer Co., Columbus, O.	Fertilizer.
Budd, M. L., Westerville, O.	Eclipse ventilator.
Campbell Fanning Mill Co., Detroit, Mich.	Fanning mills.
Carter Wire Fence Machine Co., Mt. Sterling, O.	Farm fence and fence machine in operation.
Case, J. I., Thresher Co., Racine, Wis.	Engines, separators and water tanks.
Carnegie Plow and Manufacturing Co., Carnegie, Pa.	Plows, land rollers and pumps.
Champion Wagon Co., Owego, N. Y.	Wagons and grain drills.
Champion Thresher Co., Orrville, O.	Thresher, clover huller, wind stacker and grain register.
Champion Evaporator Co., Hudson, O.	Evaporators.
Chicago Fertilizer Co., Chicago, Ill.	Fertilizer.
Chicago Wire Fence Co., Chicago, Ill.	Farm fence.
Cleveland Anchor Fence Co., Cleveland, O.	Farm and fancy wire fence.
Clipper Plow Co., Defiance, O.	Cultivators, land rollers and shoveling boards.
Columbus Plow Co. Columbus, O.	Plows.
Columbus Rock Plaster Co., Columbus, O.	Rock plaster.
Columbus Machine Co., Columbus O.	Gasoline engines.
Collins Plow Co., Quincy, Ill	Hay presses and bale tie machine.
Cook Motor Co., Delaware, O.	Engines.
Coquillard Wagon Works, South Bend, Ind.	Farm wagons.
Corn King Husker and Shredder Co., Rochester, Ind.	Corn Husker.
Colvin, Chase, South Charleston, O.	Steel anchor posts.
Deere, John & Co., Indianapolis, Ind.	Cultivators, harrows, plows, fodder cutters, hay rake, etc.
Desmond, Stephan Manuacturing Co., Urbana, O.	Injector and emery wheel dresser.
Dowagiac Manufacturing Co., Dowagiac, Mich.	Grain drills and harrows.
Dunham, J. W. & Son., Berea, O.	Land rollers and pulverizers.
Duval, V. R., Ashville, O.	Farm gate.

Dwiggins Wire Fence Co., Anderson, Ind.	Perfection and Victor lawn and farm fence, and post and fence tools.
Easy Auger Co., College Corner, O.	Post hole auger.
Eastern Moline Plow Co., Indianapolis Ind.	Corn planters, plows, harrows cultivators, wagons, potato diggers and electric motor.
Eli Engine Co., Moline, Ill.	Engines.
Empire Drill Co., Springfield, O.	Grain drills.
Evans, A. C., Manufacturing Co., Springfield, O.	Corn planters, potato planters and harrows.
Fairbanks, Morse & Co., Cincinnati, O.	Gasoline engines and pumping attachment.
Flint & Walling Manufacturing Co., Columbus, O.	Wind mills, feed grinders, corn shellers, wood and steel tanks, pumps, hose fixtures, and tank heater.
Fort Wayne Wind Mill Co., Fort Wayne, Ind.	Wind mills.
Foos Manufacturing Co., Springfield, O.	Sweep and power feed grinders, iron and wood corn shellers, corn harvesters, gasoline engine.
Fooston Wind Stacker Co., Minneapolis, Minn.	Fooston wind stacker.
Frick Co., Waynesboro, Pa.	Engines, threshers, saw mills and self feeders.
Frost Wire Fence Co., Cleveland, O.	Farm fencing.
Gale Manufacturing Co., Albion, Mich.	Cultivators, harrows, corn planters, plows and land rollers.
Geneva Metallic Wheel Co., Geneva, O.	Wagon gears, engine and implement wheels.
German Kali Works, New York, N. Y.	Kali fertilizer.
Gieser Manufacturing Co., Columbus, O.	Engines, separator, stacker, feeder and huller.
Hardy Packing Co., Chicago, Ill.	Fertilizers.
Harrison, W. R. & Co., Massillon, O.	Gasoline engines, feed cutter with blower, corn sheller.
Hays Pump and Planter Co., Galva, Ill.	Cultivators, harrows, pumps, corn planters, shoveling boards.
Hartman Mfg. Co., Vincennes, Ind.	Cultivators.
Heller, Aller & Co., Napoleon, O.	Wind mills, steel tanks, pumps, etc.
Hickox, Mull & Hill, Co., Toledo, O.	Corn planters, cultivators, harrows, plows, weeders, land rollers, garden drills, hay tedders, mowers, clover seed buncher, and sickle grinder.
Hoffman, Charles, Sandusky, O.	Combination elevating truck.
Hobart, E. F., Granville, O.	Cement posts.
Hollopeter, R., Fostoria, O.	Grain elevator.
Hoosier Drill Co., Springfield, O.	Corn planters and wheat drills.

Hoover Prout Co., Avery O	Potato digger.
Hunt, Helm, Ferris & Co., Harvard, Ill	Hay forks, carriers, wood and steel tracks, tank heaters, etc.
Hurst, Charles B., Chillicothe, O	Wagon and stock scale.
Hutchinson, R., Pavillion, N. Y	Farm fence.
Hydraulic Press Co., Mt. Gilead, O	Hydraulic cider press.
Indiana Road Machine Co., Fort Wayne Ind.	Stone crusher and road machines.
International Fence and Fire Roofing Co., Columbus, O.	Farm and lawn fences, gates, tree guards, etc.
Ironton Disc Plow Co., Ironton, O	Disc plows.
Johnston, D. D., Shelby, O	Automatic water cut-off.
Kansas City Hay Press Co., Columbus, O	Hay presses, scales, tie machines, gas engines.
Kemp & Burpee, Syracuse, N. Y	Manure spreaders.
Kenney, E. T., Co., Indiaanapolis, Ind	Corn huskers.
Kline, B. H., & Co., Delaware, O	
Keystone Manufacturing Co., Sterling, Ill	Corn husker, hay loader, hay rake, mowing machine, harrows, potato planters, and corn sheller.
Keystone Farm Machinery Co., York, Pa	Cultivators, weeders, corn shellers and cider press.
Lamb Wire Fence Co., Adrian, Mich	Farm fence.
Lewis, M. K., Albany, Ore	Farm gate.
Littler, J. H., Centerfield, O	Planter gauge for corn planters.
Long, Allstatter & Co., Hamilton, O	Harrows, cultivators, plows, hay rakes and fodder cutters.
Lyons Washing Machine Co., Lyons, Mich	Washing machine and gasoline engine.
Mason, W. H. & Co., Leesburg, O	Farm fence.
Mast, P. P. & Co., Springfield, O	Grain drills, cultivators and cider press.
Merrill & Co., Toledo, O	Gas engines, pumps, feed grinders, wagons, buggies, sleighs, cultivators, harrows, corn harvesters, etc.
Milburn Wagon Co., Toledo, O	Farm wagons.
Mobile Garden Implement Manufacturing Co., Mt. Gilead, O	Cultivators and market gardeners trucks.
McSherry Mfg. Co., Middletown, O	Grain drills, disc harrows and transplanter.
Morris, Nelson & Co., Chicago, Ill	Fertilizer and meats.
Murnna, A. L., Mechanicsburg, O	Mail box carriers.
National Drill and Mfg. Co., Barberton, O	Rock crusher, road machines and scrapers.
National Engineering Co., Saginaw, Mich	Gasoline engines.
Neer Manufacturing Co., St. Paris, O	Corn cutter and hay tedders.
New Era Iron Works, Dayton, O	Engines and pumps.
Ohio Rake Co., Dayton, O	Corn planters, cultivators, harrows and hay tools.
Ohio Stone Mfg. Co., Springfield, O	Stone press.

Ohio Motor Co., Sandusky, O.	Gasoline engines.
Ohio Manufacturing Co., Upper Sandusky, O.	Hay press, land roller and feed mills.
Ohio Cultivator Co., Bellevue, O.	Hay press.
Olds Gasoline Works, Lansing, Mich.	Gasoline engines.
Parlin, Orendorff Co., Canton, Ill.	Plows, cultivators, harrows, potato digger and fodder cutter.
Page Wooven Wire Fence Co., Adrian, Mich.	Farm, lawn and cemetery fencing.
Page Band Cutter and Self Feeder Co., Indianapolis, Ind.	Feeder, engine tender and cylinder wrench.
Porter, J. E. Co., Ottawa, Ill.	Hay press, hay tools, etc.
Reeves Bros., Columbus, O.	Gasoline engines.
Renner & Elder, Columbus, O.	Wind mills, tanks and pumps.
Rich Pump Co., Cincinnati, O.	Pumps and tanks.
Robinson & Co., Richmond, Ind.	Engines, tanks, boilers and threshers.
Roderick Lean Manufacturing Co., Mansfield, O.	Harrows, land rollers and hand carts.
Ross, E. W., Co., Springfield, O.	Feed cutters and shredders.
Ross Supply Co., Greenville, O.	Wind mills, pumps, steel and wood tanks.
Rosenthal Corn Husker Co., Milawukee, Wis.	Corn huskers.
Safety Shredder Co., New Castle, Ind.	Corn shredder.
Scheidler, R. & Co., Newark, O.	Traction engines.
Seckler, D. M., Carriage Co., Moline, Ill.	Drills and Black Hawk planters.
Seibling, Miller & Co., Doylestown, O.	Binders and mowers.
Shimer & Co., Anderson, Ind.	Farm fencing.
Shunk Plow Co., Bucyrus, O.	Plows and steel farm wagons.
Silver, S. C., London, O.	Anchor fence posts.
Smith, T. H. & Co., Pekin, Ill.	Wagons.
Smith Manure Spreader Co., Chicago, Ill.	Manure spreaders and gasoline engines.
Smith & Pomeroy, Kalamazoo, Mich.	Wind mills and wood tanks.
Smith Agricultural Chemical Co., Columbus, O.	Fertilizers.
Smalley Manufacturing Co., Manitowoc, Wis.	Feed cutter and blower.
South Bend Chilled Plow Co., South Bend, Ind.	Plows, weeders, cultivators and harrows.
Spring Steel Fence and Wire Co., Anderson, Ind.	Farm fence.
Standard Harrow Co., Utica, N. Y.	Cultivators, harrows, land rollers and corn harvesters.
Star Manufacturing Co., New Lexington, O.	Feed mills.
Stoddard Manufacturing Co., Dayton, O.	Harrows, cultivators, hay rakes.
Superior Drill Co., Springfield, O.	Grain drills, harrows and cider mill.
Swetling & Osborne, Newark, O.	Farm gates.

Syracuse Plow Co., Syracuse, N. Y.	Plows, harrows, cultivators and scrapers.
Thomas Manufacturing Co., Springfield, O.	Grain drills and hay rakes.
Troy Wagon Co., Troy, O.	Farm wagons.
Van Buren, Heck & Marion, Findlay, O.	Buckeye traction ditcher.
Vehicle Specialty Co., North Lawrence, O.	
Victor Feed Mill Co., Springfield, O.	Feed mills and horse power.
Warsaw, Wilkinson & Co., Warsaw, N. Y.	Feed cutter.
Warner's Wire Fence Co., Chicago, Ill.	Farm fence and gate.
Wayne Works, Richmond, Ind.	Wagons, carts, grain drills and corn planters.
Weber Wagon Co., Chicago, Ill.	Farm wagon.
Whitman Agricultural Co., St. Louis, Mo.	Hay press.
Winget Concrete Machine Co., Columbus, O.	Machine for making concrete blocks.
Wilson, F. M., Selma, O.	Ensilage cutters.
Wood Bros. Steel Feeder Co., Indianapolis, Ind.	
Woodcock Feed Mill Co., Chillicothe, O.	Boss and Giant feed mills.

MERCHANTS' AND MANUFACTURERS' PRODUCTS.

J. L. CARPENTER, Member in Charge.

American Art Tile Co., Columbus, O.	Art tile building stone, etc.
Barr & Johnson, Columbus, O.	Quick hitch harness and coupling.
Banner Buggy Co., St. Louis, Mo.	Surries, buggies and phaetons.
Blackwood, Green & Co., Columbus, O.	Stoves, household furnishings, etc.
Buckeye Buggy Co., Columbus, O.	Carriages, phaetons, surries and buggies.
Buckeye Saw Co., Columbus, O.	Saws and saw mill supplies.
Byers & Ramsey, Urbana, O.	Steel buggy and cart wheels.
Central Ohio Buggy Co., Upper Sandusky, O.	Carriages, phaetons and buggies.
Churchman, E., & Co., Columbus, O.	Adjustable ironing table.
Cleveland Champion Range Co., Cleveland, O.	Stoves and ranges.
Climax Buggy Co., Columbus, O.	Buggies and phaetons.
Columbus Buggy Co., Columbus, O.	Surries, phaetons, buggies, carriages, etc.
Columbus Carriage and Harness Co., Columbus, O.	Surries, buggies, phaetons, harness and robes.
Colonial Carriage Co., Circleville, O.	Buggies, phaetons and surries.
Cussins & Fearn Co., Columbus, O.	Stoves and kitchen utensils.
Columbus Heating Co., Columbus, O.	Furnaces.
Columbus Sporting Goods Co., Columbus, O.	Automobiles, bicycles and sporting goods.
Columbus Stove Co., Columbus, O.	Stoves and ranges.
Columbus Vehicle Co., Columbus, O.	Surries, phaetons and buggies.
Cook, Geo. W., Wagon Co., Marion, O.	Delivery wagons and surries.
Daugherty & Cott Co., Columbus, O.	Buggy top, storm hoods, etc.
Donavin, Geo. B., Manufacturing Co., Columbus, O.	Ranges and stoves.
Elk Heater Co., Columbus, O.	Natural gas heaters.

Enterprise Carriage Co., Miamisburg, O.	Carriages, surries and buggies.
Galion Buggy Co., Galion, O.	Buggies, surries and phaetons.
Gaumer, E., & Sons, Urbana, O.	Pony buggies and trap.
Gilbert Manufacturing Co., Columbus, O.	Gilbert's Yankee heater for wagons.
Haydock, T. T., Carriage Co., Cincinnati, O.	Phaetons, buggies and surries.
Herring Buggy Co., Mansfield, O.	Buggies and surries.
Holcker Bros. Buggy Co., Crestline, O.	Buggies, phaetons and wheels.
Home Furnishing Co., Columbus, O.	Stoves and kitchen furnishings.
Howard, A., Buggy Co., Galion, O.	Buggies, phaetons and surries.
Hertenstein & Co., Columbus, O.	Stoves of all kinds.
Hygienic Manufacturing Co., Columbus, O.	Gas cooking and heating stoves and mail boxes.
Johnson, C. B. Columbus, O.	Safety over check hook.
Jones & Williams Co., Columbus, O.	Stoves and kitchen furnishings.
Martin Carriage Co., York, Pa.	Delivery wagons.
Mason Monumental Works, Columbus, O.	Monuments, markers, etc.
Meir Carriage Co., Ligonier, Ind.	Buggies, surries and phaetons.
Modern Buggy Co., Auburn, Ind.	Buggies, surries and phaetons.
McFarlan Carriage Co., Connersville, Ind.	Carriages, surries, buggies and phaetons.
Ohio Buggy Co.. Galion, O.	Surries, phaetons and buggies.
Ohio Vehicle & Harness Co., Columbus, O.	Harness of all kinds.
Ohlen, Jas., Saw Co., Columbus, Ohio.	Circular and cross-cut saws and saw mill supplies.
Perfection Storm Shield Co., Clyde, O.	Storm shields and hoods for buggies.
Peerless Steel Range Co., Columbus, O.	Natural gas stoves, cooking or heating stoves and ranges.
Post Bros. Buggy Co.. Columbus, O.	Buggies, surries and phaetons.
Roderick,Thomas, Columbus, O.	Patent attachments for natural gas cooking and heating stoves.
Schilling, John. Columbus, O.	Gas and coal furnaces.
Scioto Buggy Co., Columbus, O.	Phaetons, buggies and surries.
Sells, J. H. & F. A., Columbus, O.	Harness and robes.
Seeley & Beery, Columbus, O.	Stoves and house furnishings.
Sterling Buggy Co.. Rushville, Ind.	Buggies, surries and phaetons.
United States Carriage Co., Columbus, O.	Hearses, funeral cars, landaus and coupes.
Vehicle Apron and Hood Co., Columbus, O.	Buggy tops, aprons and hoods.
Warren Paint Co., Columbus, O.	Paints, oils and varnishes.
Warren & Southwick, Columbus, O.	Delivery wagons.
Yardley, A. L., Columbus, O.	Window and door screens.
Zimmerman Mfg. Co., Auburn, Ind.	Carriages, surries, phaetons and buggies.

MERCHANDISE, MUSIC, ETC.

J. L. CARPENTER, Member in Charge.

American Refining Co., Columbus, O.	Peanut relish.
Arnold, W. H., Charleston, W. Va.	Shells, jewelry, etc.
Baird, Eben S., & Co., Columbus, O.	Ladies', men's and children's shoes.
Beach, J. M., Elmira, N. Y.	Shells and notions.
Bell Picture Frame Co., Columbus, O.	Pictures, frames and mirrors.
Brown, Mrs. T. J., Columbus, O.	Toilet goods.
Children's Home Society of Ohio, Columbus, O.	Literature.
Citizens' Telephone Co., Columbus, O.	Telephone exchange.
Coles, Geo. K., Mgr. Oxford Pure Food Co., Springfield, O.	Oxford flakes.
Cussins, W. C., Co., Columbus, O.	Furs and wraps.
Davis, Anna B., New Carlisle, O.	Bead work and notions.
Dickson, Jas., Cincinnati, O.	Jewelry and shells.
Drake, Wallace & Co., St. Joseph, Mich.	Shells and notions.
Eby, Ada, Chicago, Ill.	Needle threader.
Ermy, Mrs. G. W., Columbus, O.	Bead work.
Goldsmith, I., Jr., Columbus, O.	Wire jewelry.
Goldsmith, I., Sr., Columbus, O.	Handkerchiefs and embroidery machine.
Hygienic Food Co., Battle Creek, Mich.	Cereal foods.
Helser, J. T., Columbus, O.	Sheet music.
Heskett, W. E., Columbus, O.	Furniture, carpets, curtains, stoves, etc.
Hocking Valley Rug Co., Columbus, O.	Rugs made from old carpet.
King Trunk Co., Columbus, O.	Patent sliding tray for trunk.
Krauss, Butler & Benham, Columbus, O.	Carpets, curtains, etc.
Ladies' Aid Society, Wesley Chapel, Columbus, O.	Display of woman's work, lace collars, etc., rest room.
Moore & Brock, Columbus, O.	Pianos and sheet music.
McAllister, Mohler & Co., Columbus, O.	Furniture.
Newmark, H., Chicago, Ill.	Spectacles and jewelry.
Puntenny, Eutsler & Co., Columbus, O.	Pianos and sheet music.
Rarey, J. D., Columbus, O.	Ideal baby jumper.
Stewart Bros., Columbus, O.	Furniture, carpets, curtains, rugs, etc.
Snyder, W. H., Mgr., Columbus, O.	Blickensderfer typewriter.
Sarr, Leon, Ceylon, O.	Tool to repair fruit can covers.
Thompson, O. B., Jersey, O.	Patent invalid lifter.
Westlake, E. W., Columbus, O.	Glass engraver.
Whitsit, Perry B., Columbus, O.	Phonographs.

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PAUL FISCHER,
STATE VETERINARIAN.

W. W. MILLER,
SECRETARY.

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INSPECTION.
A. F. BURGESS,
CHIEF INSPECTOR.

STATE OF OHIO
DEPARTMENT OF AGRICULTURE
Division of Commercial Fertilizers

COLUMBUS, OHIO, December 31, 1903.

To the Manufacturers, Dealers and Consumers of Commercial Fertilizers:

Agreeable to the requirement of the fertilizer law of Ohio, I herewith present "a correct report of all analyses" of commercial fertilizers made by the State Chemist, "and certificates filed" by the manufacturers or general agents, guaranteeing ingredients, for the year 1903.

The following tables of analyses and valuations of commercial fertilizers include all brands that have been properly licensed to sell in the state that have been found on the markets by the Deputy Inspectors of Fertilizers. An additional table will be found giving a list of brands which have been properly licensed, but not found on the markets. If other brands have been sold in this state they have not been found by my Deputies.

All licenses expire December 31, 1903, and no commercial fertilizers can be legally sold or offered for sale in the state after this date until fees are paid and licenses secured by the maufacturers or agents for the year ending December 31, 1904, so the agent who purposes handling, selling, or dealing in commercial fertilizers in 1904 will do well to see that the manufacturer has paid license on each and every brand he offers for sale, for if the manufacturer fails to do this, the "importer or party who causes it to be sold or offered for sale within the State of Ohio," will be held for the same or subjected to the payment of the fines and penalties prescribed in Sections 4446*f* and 7002 of the Revised Statutes. To avoid all possibility of trouble, the agent handling commercial fertilizers should see that the manufacturer has complied with the law before goods are offered for sale. Whether or not this has been done can be learned from the manufacturer, or from the Secretary of the State Board of Agriculture, Columbus, Ohio.

It is to the advantage of all dealers in and purchasers of commercial fertilizers that the fertilizer law should be enforced, and if they know of any brands offered for sale in 1903, not appearing in the following lists, they will aid the enforcement of the law and confer a favor by notifying the Secretary. In a few cases goods are shipped into the state by parties who are ignorant of the law, and who will promptly comply with its requirements as soon as they receive the necessary information.

With the co-operation of all farmers using commercial fertilizers, and of all just manufacturers and dealers, I feel certain that evasions of the law will be few and will soon cease altogether. The penalties prescribed by law and the injury to the reputation of the manufacturer who seeks to evade it are so great that he can not afford to neglect to comply with its reasonable requirements.

Manufacturers intending to place their goods on sale in Ohio should send to the Secretary for blanks on which to make formal application for license to sell commercial fertilizers.

Manufacturers, when applying for licenses, will facilitate the work of sampling their goods by sending to the Secretary lists of their agents and stating where goods may be found.

SAMPLES SENT BY MANUFACTURERS.

To comply with the law, manufacturers should always send samples of commercial fertilizers to the Secretary of the State Board of Agriculture, when making application for license, that they may be used in comparison with those drawn on the markets for analysis.

ADVANCE REPORTS.

It is my custom to send advance reports to manufacturers, to give them an opportunity to check the Chemist's work, before the results are published in the annual report, in order to insure accuracy. The analyses reported will be published unless some errors are shown. It is not sufficient to claim the analyses are wrong because they show lower percentages than the maufacturers claim; this is not proof or evidence of error. The object of sending these advance reports is to enable me to eliminate errors should they exist. Where there are doubts about the findings I will have samples re-tested and will, if requested, cause parts of the samples in question to be sent to any member of the Association of Official

Agricultural Chemists, of which Prof. Harvey W. Wiley, of Washington, D. C., is Secretary; but the manufacturers making such requests must pay the official chemists they select for making re-analyses.

REGULAR ANALYSES.

The work of sampling and analyzing fertilizers is done in accordance with the fertilizer law of the state, and under this law the Official Chemist analyzes such samples as are furnished him by the Secretary of the State Board of Agriculture.

Samples are drawn from the open markets of the state and from stocks purchased by consumers of commercial fertilizers by my duly authorized Deputy Inspectors, F. A. Derthick, Ed. Loewer, R. H. Ramsdell, B. M. Derthick and M. R. Merritt. Great care is taken in this work, and samples are drawn from every brand that can be found in the state by diligent search and inquiry, covering a period from the latter part of March until the early part of December. It is regretted that samples of all licensed goods could not be found, but until manufacturers and dealers give more care to the matter of informing me where goods can be found, perfect results can not be obtained. With the information possessed by the Secretary and his Deputy Inspectors, the field has been worked diligently and faithfully.

SPECIAL ANALYSES.

I frequently have requests from farmers and agents to make special analyses of samples of commercial fertilizers. I am obliged to say that the law does not provide for these, and I have no fund for paying for the work involved. If it will be an accommodation, I will have special analyses made by the Official Chemist of such samples as may be sent me with the proper fees, as follows: "Phosphates" and "Superphosphates": Ammonia, three dollars ($3); phosphoric acid (two determinations), six dollars ($6); potash, three dollars ($3); or a total of twelve dollars ($12) if all three ingredients are claimed. "Bones" and "Tankages": Ammonia, three dollars ($3); total phosphoric acid, three dollars (3); potash, three dollars ($3); or a total of nine dollars ($9) if all three ingredients are claimed; or, in other words, three dollars ($3) for each and every determination.

In selecting a sample for analysis great care should be taken to secure a fair average of the goods from which the sample is drawn. A small quantity should be taken from five to eight different parts—top, bottom, center, sides, etc.—of each of several packages of fertilizers, and all these small parcels should be carefully and thoroughly mixed together; then from this take from one-half pint to a pint and put into an air-tight package—glass or tin—and send by express or mail, charges prepaid.

VALUATIONS OF COMMERCIAL FERTILIZERS.

Great care has been given to the subject of valuations, and the figures given in the following tables are the results of a careful and painstaking study of the market quotations of fertilizer ingredients and the cost of mixing and placing on the markets of the state well-prepared commercial fertilizers.

Of course, it is impossible in any system of commercial valuations to fix absolutely exact prices at which goods are or can be sold, uniformly and under all circumstances and conditions. The two objects sought, however, are, first, to give a uniform scale for commercial comparison; and second, to give, as nearly as possible, a reasonably correct average price at which the farmer should have been able to buy good fertilizers in 1903.

It is always necessary to bear in mind that the values given to these fertilizers are intended to express their *commercial values;* that is, the cost at which the materials should be put together and sold at a fair profit; and are not necessarily indicative in any way of their *agricultural values,* which, of course, depend on the nature of the soils on which they are used and the needs of the crops grown.

VALUES FOR 1903.

TABLE NO. 1.—MIXED FERTILIZERS, WITH POTASH.

Ammonia, 12½ cents per pound, or $2.50 per unit.

Available phosphoric acid, 5 cents per pound, or $1.00 per unit.

Insoluble phosphoric acid, in *bone,* 2½ cents per pound, or 50 cents per unit.

Insoluble phosphoric acid, in mixed animal and mineral, 1 cent per pound, or 20 cents per unit.

Potash (actual) from sulphate, 5¾ cents per pound, or $1.15 per unit.

Potash (actual) from muriate, 5 cents per pound, or $1.00 per unit.

TABLE NO. 2.—MIXED FERTILIZERS, WITHOUT POTASH.

Ammonia, 12½ cents per pound, or $2.50 per unit.

Available phosphoric acid, 5 cents per pound, or $1.00 per unit.

Insoluble phosphoric acid, in *bone,* 2½ cents per pound, or 50 cents per unit.

Insoluble phosphoric acid, in mixed animal and mineral, 1 cent per pound, or 20 cents per unit.

TABLE NO. 3.—DISSOLVED BONE.

Ammonia, 12½ cents per pound, or $2.50 per unit.
Available phosphoric acid, 5 cents per pound, or $1.00 per unit.
Insoluble phosphoric acid, 2½ cents per pound, or 50 cents per unit.

TABLE NO. 4.—ROCK PHOSPHATE.

Available phosphoric acid, 5 cents per pound, or $1.00 per unit.

TABLE NO. 5.—ROCK PHOSPHATE AND POTASH.

Available phosphoric acid, 5 cents per pound, or $1.00 per unit.
Potash (actual) from sulphate, 5¾ cents per pound, or $1.15 per unit.
Potash (actual) from muriate, 5 cents per pound, or $1.00 per unit.

TABLE NO. 6.—TANKAGE.

Ammonia, 9 cents per pound, or $1.80 per unit.
Total phosphoric acid, 3 cents per pound, or 60 cents per unit.

TABLE NO. 7.—TANKAGE AND POTASH.

Ammonia, 9 cents per pound, or $1.80 per unit.
Total phosphoric acid, 3 cents per pound, or 60 cents per unit.
Potash (actual) from sulphate, 5¾ cents per pound, or $1.15 per unit.
Potash (actual) from muriate, 5 cents per pound, or $1.00 per unit.

TABLE NO. 8.—BONES.

Ammonia, 12½ cents per pound, or $2.50 per unit.
Phosphoric acid in "fine" bone, 3¾ cents per pound, or 75 cents per unit.
Phosphoric acid in "medium" bone, 3 cents per pound, or 60 cents per unit.
Potash, if found present, valued same as in TABLE NO. 1.

TABLE No. 9.—POTASH SALTS.

Potash (actual) from sulphate, 5¾ cents per pound, or $1.15 per unit.

Potash (actual) from muriate, 5 cents per pound, or $1.00 per unit.

TABLE No. 10.—NITRATE OF SODA.

Ammonia, 12½ cents per pound, or $2.50 per unit.

TABLE No. 11.—PRECIPITATED PHOSPHATE.

Available phosphoric acid, 5 cents per pound, or $1.00 per unit.

On the last pages of this report will be found the fertilizer law of the state, in force at this time.

W. W. MILLER, *Secretary*.

NOTE.—"Unit" is a trade expression used in speaking of the ingredients of commercial fertilizers, and means one percentum of a ton, or twenty pounds; *e. g.*, ammonia 12½ cents per pound, or $2.50 per unit; that is, $2.50 for twenty pounds.

TABULATED ANALYSES AND VALUATIONS OF COMMERCIAL FERTILIZERS FOR THE YEAR ENDING DECEMBER 31, 1903.

All analyses are made by Prof. N. W. Lord, Ohio State University, Columbus, Ohio, Official Chemist.

TABLE I.—MIXED FERTILIZERS, WITH POTASH.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
1	**Wheat and Corn Special**......................	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Chicago Fertilizer Co., Chicago, Ill......	Found.	1.55	3.87	7.98	7.98	2.17	.44	10.15	1.23	1.23	13.52	1
2	**Capital Grain and Grass Grower**.............	Claimed.	1.00	....	10.00	....	1.00	....	11.00	1.00	....	....	
	Cincinnati Phosphate Co., Sta. P., Cin'ti, O..	Found.	1.30	3.25	10.36	10.36	3.00	.60	13.36	*1.16	1.33	15.54	2
3	**Number One Fish Guano**......................	Claimed.	1.00	....	10.00	....	1.00	....	11.00	1.00	....	....	
	The Jarecki Chem. Co., Sandusky & Cin'ti, O..	Found.	1.25	3.12	10.36	10.36	3.33	.67	13.69	*1.22	1.40	15.55	3
4	**Complete Fertilizer**	Claimed.	0.50	....	8.00	....	....	....	....	2.50	....	....	
	The Buckeye Fertilizer Co., Columbus, O......	Found.	0.65	1.62	10.11	10.11	1.66	.33	11.77	*2.12	2.44	14.50	4
5	**Special Blood and Potash Mixture**.	Claimed.	1.00	....	8.00	....	....	....	....	4.00	....	....	
	The Buckeye Fertilizer Co., Columbus, O......	Found.	1.05	2.62	7.92	7.92	4.35	.87	12.27	4.09	4.09	15.50	5
7	**Homestead. A Bone Black**...................	Claimed.	2.50	....	8.00	....	....	....	10.00	1.50	....	....	
	Michigan Carbon Works, Detroit, Mich......	Found.	2.93	7.32	8.32	8.32	2.68	.54	11.00	1.76	1.76	17.94	7
8	**Peerless Corn, Wheat and Grass Grower**........	Claimed.	1.00	....	7.00	....	1.00	....	8.00	1.00	....	....	
	The Canton Fert. and Chem. Co., Canton, O..	Found.	2.05	5.12	7.74	7.74	1.02	.20	8.82	*2.06	2.37	15.43	8
10	**Acme Complete Fertilizer**.................. .	Claimed.	1.00	....	7.00	....	....	....	8.00	1.00	....	....	
	The Canton Fert. and Chem. Co., Canton, O..	Found.	1.25	3.12	7.16	7.16	2.17	.44	9.33	1.52	1.52	12.24	10

11	**Corn and Wheat Grower**....................	Claimed.	2.00	....	8.00	....	....	....	10.00	2.00	....	....	11
	The Northwestern Fert. Co., Chicago, Ill....	Found.	2.25	5.62	9.60	9.60	2.17	.44	11.77	2.30	2.30	17.96	
14	**Crop Producer**	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	14
	The Hardy Packing Co., Chicago, Ill........	Found.	1.05	2.62	8.18	8.18	1.66	.33	9.84	1.64	1.64	12.77	
16	**Tankage, Bone and Potash**....................	Claimed.	1.50	....	8.00	....	....	....	10.00	2.00	....	....	16
	The Hardy Packing Co., Chicago, Ill........	Found.	1.55	3.87	8.82	8.82	1.79	.36	10.61	2.16	2.16	15.21	
18	**Tobacco and Potato Special**..................	Claimed.	2.00	....	8.00	....	....	....	10.00	4.00	....	....	18
	The Hardy Packing Co., Chicago, Ill........	Found.	1.65	4.12	10.16	10.16	1.85	.37	12.01	3.12	3.12	17.77	
19	**Empire**	Claimed.	1.00	....	7.00	....	1.00	....	8.00	1.00	....	....	19
	The Schaal-Sheldon Fert. Co., Erie, Pa......	Found.	1.20	3.00	7.87	7.87	2.62	.53	10.49	1.66	1.66	13.06	
20	**Sheldon's Farmers' Favorite**..................	Claimed.	1.00	....	8.00	....	1.00	....	9.00	2.00	....	....	20
	The Schaal-Sheldon Fert. Co., Erie, Pa......	Found.	1.10	2.75	7.93	7.93	2.87	.58	10.80	2.16	2.16	13.42	
21	**Schaal's Corn and Potato**.....................	Claimed.	3.00	....	8.00	....	1.00	....	9.00	4.00	....	....	21
	The Schaal-Sheldon Fert. Co., Erie, Pa......	Found.	2.70	6.75	8.82	8.82	2.11	.42	10.93	4.26	4.26	20.25	
22	**Trucker's Manure**	Claimed.	4.00	....	8.00	....	1.00	....	9.00	7.00	....	....	22
	The Schaal-Sheldon Fert. Co., Erie, Pa......	Found.	3.45	8.62	7.99	7.99	1.79	.36	9.78	6.67	6.67	23.64	
24	**Onion and Cabbage**	Claimed.	1.25	....	10.00	....	1.00	....	11.00	6.00	....	....	24
	The Schaal-Sheldon Fert. Co., Erie, Pa....	Found.	1.40	3.50	9.52	9.52	2.43	.49	11.95	5.59	5.59	19.10	
26	**Superphosphate**	Claimed.	2.00	....	8.00	....	4.00	....	12.00	2.00	....	....	26
	Swift & Company, Chicago, Ill..............	Found.	2.00	5.00	7.74	7.74	†2.81	1.40	10.55	1.95	1.95	16.09	
30	**Onion, Potato and Tobacco**..................	Claimed.	2.00	....	8.00	....	3.00	....	11.00	7.00	....	....	30
	Swift & Company, Chicago, Ill..............	Found.	2.50	6.25	7.86	7.86	3.39	.68	11.25	*6.97	8.02	22.81	
33	**Grain Grower**	Claimed.	2.00	....	8.00	....	2.00	....	10.00	2.00	....	....	33
	The Armour Fertilizer Works, Chicago, Ill...	Found.	2.15	5.37	8.00	8.00	3.13	.63	11.13	1.99	1.99	15.99	
34	**Ammoniated Bone with Potash**...............	Claimed.	3.00	....	6.00	....	2.00	....	8.00	2.00	....	....	34
	The Armour Fertilizer Works, Chicago, Ill...	Found.	3.50	8.75	7.28	7.28	†2.56	1.28	9.84	2.40	2.40	19.71	

† From animal matter.

* From sulphate

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
36	**High-Grade Potato**	Claimed.	2.00	....	8.00	....	2.00	....	10.00	10.00	....	....	
	The Armour Fertilizer Works, Chicago, Ill...	Found.	1.60	4.00	9.32	9.32	0.77	.15	10.09	5.84	5.84	19.31	36
38	**Bradley's B. D. Sea Fowl Guano**..............	Claimed.	2.50	....	8.00	....	....	....	10.00	1.50	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	2.90	7.25	8.44	8.44	2.11	.42	10.55	1.66	1.66	17.77	38
39	**Bradley's Niagara Phosphate**	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y......	Found.	1.20	3.00	7.60	7.60	2.05	.41	9.65	1.18	1.13	12.19	39
41	**Cleveland Dryer's Ohio Seed Maker and Potash**	Claimed.	2.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	2.20	5.50	9.27	9.27	2.11	.42	11.38	2.22	2.22	17.41	41
42	**Milsom's Erie King**..........................	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.27	3.17	7.87	7.87	1.72	.34	9.59	1.25	1.25	12.63	42
43	**Pacific's A No. 1 Phosphate**..................	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.35	3.37	7.92	7.92	2.05	.41	9.97	1.22	1.22	12.92	43
46	**Read's Gold Coin**............................	Claimed.	2.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	2.00	5.00	9.11	9.11	2.14	.43	11.25	2.18	2.18	16.72	46
47	**Read's Standard**	Claimed.	1.00	....	8.00	....	....	....	10.00	4.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.20	3.00	8.45	8.45	2.10	.42	10.55	3.85	3.85	15.72	47
48	**Read's Leader**	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.17	2.92	7.16	7.16	1.98	.40	9.14	1.14	1.14	11.62	43

51	**Williams & Clark's Good Grower Potato Phos.**	Claimed.	1.00	....	8.00	....	....	....	10.00	4.00	....	....	51
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.25	3.12	8.40	8.40	2.60	.52	11.00	4.20	4.20	16.24	
52	**Williams & Clark's Royal Bone Phosphate....**	Claimed.	1.25	....	8.00	....	....	....	10.00	2.00	....	....	52
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.30	3.25	8.24	8.24	1.79	.36	10.03	2.22	2.22	14.07	
53	**Ohio Vegetable Manure.......................**	Claimed.	1.00	....	8.00	....	....	....	10.00	7.00	....	....	53
	The Am. Ag. Chem. Co., New York, N.Y....	Found.	1.20	3.00	8.44	8.44	2.05	.41	10.49	6.65	6.65	18.50	
57	**Acidulated Bone ....**	Claimed.	1.00	....	8.00	....	1.00	....	9.00	1.00	....	....	57
	The M. Hamm Co., Washington C. H., Ohio..	Found.	0.80	2.00	10.80	10.80	2.05	.41	12.85	0.91	.91	14.12	
62	**General Crop Fish Guano ....**	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	62
	The Ohio Farmers' Fert. Co., Columbus, O..	Found.	1.30	3.25	7.42	7.42	1.66	.33	9.08	1.52	1.52	12.52	
63	**Potato and Tobacco Special..................**	Claimed.	2.00	....	8.00	....	....	....	10.00	4.00	....	....	63
	The Ohio Farmers' Fert. Co., Columbus, O..	Found.	2.15	5.37	9.08	9.08	2.05	.41	11.13	3.18	3.18	18.04	
65	**Western Bone Black and Potash..............**	Claimed.	0.50	....	8.00	....	....	....	10.00	2.50	....	....	65
	The Chicago Fertilizer Co., Chicago, Ill.......	Found.	1.20	3.00	8.49	8.49	1.66	.33	10.15	1.08	1.08	12.90	
66	**Potato, Truck and Tobacco Fertilizer..........**	Claimed.	2.00	....	8.00	....	....	....	10.00	4.00	....	....	66
	The Chicago Fertilizer Co., Chicago, Ill......	Found.	1.45	3.62	8.64	8.64	2.36	.47	11.00	3.32	3.32	16.05	
72	**Peerless Bone and Potash...................**	Claimed.	0.50	....	8.00	....	....	....	10.00	2.50	....	....	72
	The Abbott & Martin Rend. Co., Columbus, O.	Found.	0.75	1.88	8.95	8.95	2.56	.51	11.51	2.74	2.74	14.08	
74	**Ideal Grain Grower ....**	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	74
	The Abbott & Martin Rend. Co., Columbus, O.	Found.	1.30	3.25	7.47	7.47	1.92	.39	9.39	*1.58	1.82	12.93	
78	**Big Four Bone Phosphate with Potash.......**	Claimed.	5.00	....	9.00	....	....	....	12.00	4.00	....	....	78
	Nelson Morris & Co., Chicago, Ill............	Found.	6.45	16.12	7.10	7.10	†3.90	1.95	11.00	*4.82	5.54	30.71	
82	**Big Eight, Ammonited Acid Phos. with Potash**	Claimed.	1.00	....	10.00	....	....	....	11.00	1.00	....	....	82
	Nelson Morris & Co., Chicago, Ill.............	Found.	1.05	2.63	10.40	10.40	1.60	.32	12.00	1.04	1.04	14.39	
85	**Standard's Guano ....**	Claimed.	1.25	....	8.00	....	....	....	10.00	2.00	....	....	85
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.20	3.00	8.18	8.18	2.11	.42	10.29	1.95	1.95	13.55	

† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
86	**Standard's A Brand**	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	1.15	2.87	8.62	8.62	1.28	.26	9.90	1.29	1.29	13.04	86
90	**Grain and Grass Special**	Claimed.	0.50	....	8.00	....	1.00	....	9.00	2.00	....	....	
	The Newport Fertilizer Co., Philadelphia, Pa.	Found.	0.70	1.75	9.59	9.59	2.87	.57	12.46	1.22	1.22	13.13	90
94	**Ruby Phosphate**	Claimed.	1.00	....	10.00	....	1.00	....	12.00	1.00	....	....	
	James McCallum & Co., Dayton, O.	Found.	1.00	2.50	11.08	11.08	2.68	.54	13.76	1.31	1.31	15.43	94
96	**Fox Formula**	Claimed.	1.00	....	11.00	....	2.00	....	13.00	3.00	....	....	
	The Fox Chemical Co., Louisville, Ky.	Found.	1.15	2.87	11.90	11.90	1.08	.22	12.98	2.45	2.45	17.44	96
98	**Harvest Bone**	Claimed.	1.00	....	8.00	....	2.00	....	10.00	1.00	....	....	
	The Bowker Fertilizer Co., Cincinnati, O.	Found.	1.30	3.25	7.92	7.92	4.60	.92	12.52	1.49	1.49	13.58	98
99	**Fish Guano**	Claimed.	1.00	....	8.00	....	1.00	....	9.00	3.00	....	....	
	The Bowker Fertilizer Co., Cincinnati, O.	Found.	1.20	3.00	8.06	8.06	2.87	.58	10.93	3.05	3.05	14.69	99
101	**Ten Per Cent. Manure**	Claimed.	1.00	....	5.00	....	2.00	....	7.00	10.00	....	....	
	The Bowker Fertilizer Co., Cincinnati, O.	Found.	1.35	3.37	5.95	5.95	0.96	.19	6.91	9.21	9.21	18.72	101
110	**Niagara's Grain and Grass Grower**	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	1.15	2.87	7.28	7.28	2.11	.42	9.39	1.23	1.23	11.80	110
112	**Bradley's Corn and Wheat Phosphate**	Claimed.	1.00	....	10.00	....	....	....	12.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	1.40	3.50	10.61	10.61	1.40	.28	12.01	1.23	1.23	15.62	112

115	**Crocker's Potato, Hop and Tobacco Phosphate**	Claimed.	2.50	....	8.00	....	....	....	10.00	3.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	2.75	6.87	9.47	9.47	1.72	.35	11.19	3.30	3.30	19.99	115
116	**Crocker's Wheat and Corn Phosphate**........	Claimed.	2.50	....	8.00	....	....	....	10.00	1.50	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	2.65	6.62	8.70	8.70	2.81	.56	11.51	1.79	1.79	17.67	116
117	**Crocker's New Rival Phosphate**.............	Claimed.	1.50	....	9.00	....	....	....	11.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.90	4.75	9.01	9.01	2.30	.46	11.31	2.30	2.30	16.52	117
118	**Crocker's General Crop Phosphate**............	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.45	3.62	6.52	6.52	1.59	.32	8.11	1.25	1.25	11.71	118
120	**Milsom's Buffalo Guano**.......................	Claimed.	1.00	....	8.00	....	....	....	10.00	4.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.25	3.12	8.82	8.82	1.98	.40	10.80	3.80	3.80	16.14	120
121	**Milsom's Wheat, Oats and Barley**..............	Claimed.	1.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.20	3.00	8.44	8.44	2.05	.41	10.49	2.14	2.14	13.99	121
124	**Harvest King**	Claimed.	1.50	....	8.00	....	....	....	10.00	2.00	....	....	
	The Abbott & Martin Rend. Co., Columbus, O.	Found.	1.85	4.62	8.12	8.12	2.43	.49	10.55	2.45	2.45	15.68	124
125	**Complete Fertilizer**	Claimed.	1.25	....	8.00	....	3.00	....	11.00	1.00	....	....	
	Swift & Company, Chicago, Ill.............	Found.	1.95	4.87	8.19	8.19	1.40	.28	9.59	1.39	1.39	14.73	125
126	**Lake Erie Fish Guano**.......................	Claimed.	1.00	....	10.00	....	1.00	....	11.00	2.00	....	....	
	The Jarecki Chem. Co., Sandusky & Cin'ti, O..	Found.	1.30	3.25	9.54	9.54	3.64	.73	13.18	*1.83	2.10	15.62	126
128	**Fish and Potash Tobacco and Potato Food**......	Claimed.	1.00	....	8.00	....	1.00	....	9.00	4.00	....	....	
	The Jarecki Chem. Co., Sandusky & Cin'ti, O..	Found.	1.20	3.00	7.15	7.15	4.99	1.00	12.14	3.76	3.76	14.91	128
129	**O. K. Fertilizer**	Claimed.	0.50	....	6.00	....	1.00	....	7.00	0.50	....	....	
	The Jarecki Chem. Co., Sandusky & Cin'ti, O..	Found.	0.85	2.12	5.82	5.82	2.11	.42	7.93	*1.06	1.22	9.58	129
130	**Hardy's Corn and Wheat Grower**...........	Claimed.	0.50	....	8.00	....	....	....	10.00	2.50	....	....	
	The Hardy Packing Co., Chicago, Ill........	Found.	0.75	1.87	9.15	9.15	2.62	.53	11.77	2.66	2.66	14.21	130
132	**Farmers' Favorite Brand**......................	Claimed.	3.00	....	8.00	....	....	....	10.00	4.00	....	....	
	Darling & Company, Chicago, Ill............	Found.	3.45	8.62	8.24	8.24	†6.40	3.20	14.64	*4.09	4.70	24.76	132

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† From animal matter.

* From sulphate.

TABLE I.—Mixed Fertilizers, with Potash—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
133	**Sure Winner Brand**	Claimed.	1.00	....	8.00	....	....	....	10.00	3.00	....	....	
	Darling & Company, Chicago, Ill.	Found.	1.35	3.37	7.67	7.67	3.07	.62	10.74	3.43	3.43	15.09	133
134	**Celery and Potato Grower**	Claimed.	1.00	....	8.00	....	2.00	....	10.00	4.00	....	....	
	The Armour Fertilizer Works, Chicago, Ill.	Found.	1.17	2.92	9.40	9.40	1.79	.36	11.19	*3.89	4.47	17.15	134
136	**Bone Phosphate**	Claimed.	1.00	....	10.00	....	1.00	....	11.00	1.00	....	....	
	The Packers' Fertilizer Co., Cincinnati, O.	Found.	1.22	3.05	10.04	10.04	3.52	.71	13.56	*1.33	1.53	15.33	136
139	**Special Corn Manure**	Claimed.	1.00	....	8.00	....	2.00	....	10.00	2.00	....	....	
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	1.25	3.12	7.97	7.97	2.23	.45	10.20	2.10	2.10	13.64	139
141	**Corn, Oats and Wheat Fish Guano**	Claimed.	1.50	....	8.00	....	....	....	10.00	2.00	....	....	
	The Ohio Farmers' Fertilizer Co., Columbus.	Found.	1.75	4.37	8.50	8.50	1.92	.39	10.42	2.68	2.68	15.94	141
143	**Bradley's Dissolved Bone and Potash**	Claimed.	1.25	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	1.40	3.50	8.89	8.89	2.81	.56	11.70	1.97	1.97	14.92	14
145	**Farmers' Union Standard Phosphate**	Claimed.	1.50	....	9.00	....	....	....	11.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	1.67	4.17	9.41	9.41	2.36	.47	11.77	2.14	2.14	16.19	145
148	**Great Eastern's Vegetable, Vine and Tobacco.**	Claimed.	2.50	....	8.00	....	....	....	10.00	3.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	2.80	7.00	9.34	9.34	1.72	.35	11.06	3.32	3.32	20.01	148
149	**Great Eastern's English Wheat Grower**	Claimed.	1.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	1.30	3.25	8.49	8.49	1.66	.33	10.15	2.39	2.39	14.46	149

150	**Great Eastern's Corn Fertilizer**...........	Claimed.	1.00	....	8.00	....	....	....	10.00	4.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y...	Found.	1.30	3.25	8.89	8.89	2.17	.44	11.06	4.55	4.55	17.13	150
152	**Wheat, Corn and Oats Special**................	Claimed.	1.00	....	7.00	....	2.00	....	9.00	1.00	....	....	
	The Armour Fertilizer Works, Chicago, Ill..	Found.	1.25	3.12	6.71	6.71	1.98	.40	8.69	1.42	1.42	11.65	152
157	**Bradley's Potato and Root Phosphate**........	Claimed.	1.00	....	8.00	....	....	....	10.00	4.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.32	3.30	8.38	8.38	2.36	.47	10.74	4.09	4.09	16.24	157
161	**Detrick's Imperial Compound**.................	Claimed.	1.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.25	3.12	8.38	8.38	1.59	.32	9.97	1.93	1.93	13.75	161
168	**Bone, Blood and Potash**......................	Claimed.	1.50	....	8.00	....	....	....	10.00	2.00	....	....	
	The Chicago Fertilizer Co., Chicago, Ill......	Found.	1.85	4.62	7.98	7.98	2.11	.42	10.09	2.35	2.35	15.37	168
169	**Globe Bone and Potash**.......................	Claimed.	0.50	....	11.00	....	....	....	....	1.00	....	....	
	The Globe Fertilizer Co., Louisville, Ky....	Found.	1.00	2.50	11.77	11.77	1.21	.24	12.98	*1.12	1.29	15.80	169
175	**Animal Bone Phosphate**.......................	Claimed.	3.00	....	10.00	....	2.00	....	12.00	3.00	....	....	
	G. W. Rickard, Medina, O.....................	Found.	2.75	6.87	11.12	11.12	1.59	.32	12.71	3.12	3.12	21.43	175
179	**Fish and Potash Grain Special**................	Claimed.	1.50	....	9.00	....	1.00	....	10.00	2.00	....	....	
	The Jarecki Chem. Co., Sandusky & Cin'ti, O..	Found.	1.52	3.80	9.84	9.84	2.43	.49	12.27	*1.93	2.22	16.35	179
180	**Eagle Corn and Wheat Grower**................	Claimed.	2.00	....	8.00	....	....	....	....	2.00	....	....	
	The Globe Fertilizer Co., Louisville, Ky......	Found.	2.15	5.37	9.41	9.41	5.81	1.16	15.22	1.99	1.99	17.93	180
181	**Globe Bone Dust**............................	Claimed.	1.00	....	9.00	....	....	....	....	1.00	....	....	
	The Globe Fertilizer Co., Louisville, Ky......	Found.	1.20	3.00	10.48	10.48	7.23	1.45	17.71	1.08	1.08	16.01	181
182	**Dissolved Bone with Potash**..................	Claimed.	1.00	....	10.00	....	....	....	....	2.00	....	....	
	George A. Bell, Wheelersburg, O............	Found.	1.10	2.75	11.19	11.19	2.17	.43	13.36	*1.77	2.04	16.41	182
183	**Acidulated Bone and Potash**..................	Claimed.	3.00	....	12.00	....	....	....	....	2.00	....	....	
	George A. Bell, Wheelersburg, O............	Found.	2.55	6.37	10.43	10.43	4.60	.92	15.03	*2.49	2.86	20.58	183
184	**Homestead Potato and Tobacco Fertilizer**....	Claimed.	2.50	....	8.00	....	....	....	10.00	3.00	....	....	
	Michigan Carbon Works, Detroit, Mich......	Found.	2.50	6.25	7.28	7.28	4.79	.96	12.07	3.10	3.10	17.59	184

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
185	**Red Line Complete Manure**....................	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	Michigan Carbon Works, Detroit, Mich.....	Found.	1.35	3.37	8.64	8.64	1.59	.32	10.23	1.23	1.23	13.56	185
	Tobacco and Potato Special..................	Claimed.	2.00	....	8.00	....	....	....	10.00	4.00	....	....	
	The Abbott & Martin Rend. Co., Columbus, O.	Found.	2.30	5.75	9.96	9.96	2.11	.42	12.07	4.41	4.41	20.54	188
189	**Chicago Brand**	Claimed.	2.00	....	8.00	....	....	....	10.00	2.00	....	....	
	Darling & Company, Chicago, Ill............	Found.	2.00	5.00	7.49	7.49	3.25	.65	10.74	2.04	2.04	15.18	189
190	**Western Brand**	Claimed.	0.50	....	7.00	....	....	....	9.00	0.50	....	....	
	Darling & Company, Chicago, Ill............	Found.	0.97	2.42	7.41	7.41	1.92	.39	9.33	*0.83	.95	11.17	190
194	**Cleveland Dryer's Phospho Bone**................	Claimed.	1.00	....	10.00	....	....	....	12.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.40	3.50	10.42	10.42	3.39	.68	13.81	1.10	1.10	15.70	194
195	**Crocker's Universal Grain Grower**.............	Claimed.	1.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.30	3.25	8.26	8.26	2.74	.55	11.00	2.35	2.35	14.41	195
197	**Great Eastern's Wheat Special**................	Claimed.	2.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	2.20	5.50	8.95	8.95	2.30	.46	11.25	2.95	2.95	17.88	197
200	**Pacific's Nobsque Guano**......................	Claimed.	1.25	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.12	2.80	8.50	8.50	2.17	.43	10.67	*2.41	2.77	14.50	200
202	**Corn and Wheat Grower**......................	Claimed.	0.17	....	10.00	....	1.00	....	11.00	0.50	....	....	
	The Tennessee Chemical Co., Nashville, Tenn	Found.	0.32	.80	9.53	9.53	11.64	2.33	21.17	0.31	.31	12.97	202

203	**Special Corn Grower** The Continental Fert. Co., Nashville Tenn.	Claimed. Found.	1.00 1.20	.... 3.00	7.00 6.96	.... 6.96	1.00 2.05	.... .41	8.00 9.01	1.00 *1.27	.... 1.46	.... 11.83	203
207	**Special Compound** The Newport Fertilizer Co., Philadelphia, Pa	Claimed. Found.	1.25 1.20	.... 3.00	10.00 7.29	.... 7.29	1.00 4.41	.... .88	11.00 11.70	2.00 2.18	.... 2.18	.... 13.35	207
213	**Valley Gem Phosphate** The Queen City Fertilizer Co., Cincinnati, O.	Claimed. Found.	1.00 1.10	.... 2.75	10.00 11.83	.... 11.83	1.00 2.30	.... .46	11.00 14.13	1.00 *1.45	.... 1.67	.... 16.71	213
215	**Ammoniated Bone and Potash** Packers' Fertilizer Association, Chicago, Ill.	Claimed. Found.	1.00 1.25	.... 3.12	10.00 10.30	.... 10.30	.... 2.81	.... .56	12.00 13.11	1.00 1.14	.... 1.14	.... 15.12	215
216	**Grain Manure** Walker, Stratman & Co., Pittsburg, Pa.	Claimed. Found.	1.00 1.30	.... 3.25	8.00 6.33	.... 6.33	1.00 2.36	.... .47	9.00 8.69	1.00 1.58	.... 1.58	.... 11.63	216
218	**Soluble Bone** The E. Rauh & Sons Fert. Co., Indianapolis, Ind.	Claimed. Found.	1.50 1.40	.... 3.50	8.50 9.89	.... 9.89	2.50 2.11	.... .42	11.00 12.00	1.00 0.98	.... .98	.... 14.79	218
219	**Dissolved Bone and Potash** The E. Rauh & Sons Fert. Co., Indianapolis, Ind	Claimed. Found.	1.50 1.00	.... 2.50	8.50 9.03	.... 9.03	2.50 1.92	.... .39	11.00 10.95	3.00 *2.89	.... 3.32	.... 15.24	219
220	**Sweepstakes Bone** The Packers' Fertilizer Co., Cincinnati, O.	Claimed. Found.	1.00 1.25	.... 3.12	10.00 9.46	.... 9.46	1.00 3.52	.... .71	11.00 12.98	2.00 *2.14	.... 2.46	.... 15.75	220
221	**Animal Guano and Potash** The Packers' Fertilizer Co., Cincinnati, O.	Claimed. Found.	1.00 1.10	.... 2.75	8.00 10.04	.... 10.04	1.00 2.81	.... .56	9.00 12.85	4.00 *3.35	.... 3.85	.... 17.20	221
223	**Peerless Superphosphate** The Canton Fert. & Chem. Co., Canton, O.	Claimed. Found.	1.75 2.10	.... 5.25	8.00 8.81	.... 8.81	0.50 1.28	.... .26	8.50 10.09	1.50 2.08	.... 2.08	.... 16.40	223
224	**Peerless Vegetable Grower** The Canton Fert. & Chem. Co., Canton, O.	Claimed. Found.	2.75 2.65	.... 6.62	8.00 10.17	.... 10.17	1.00 1.02	.... .20	9.00 11.19	5.00 *5.51	.... 6.36	.... 23.35	224
229	**Cleveland Dryer's Pot., Tob. & Gen. Crop Fert.** The Am. Ag. Chem. Co., New York. N. Y.	Claimed. Found.	1.00 1.20	.... 3.00	8.00 8.51	.... 8.51	.... 2.49	.... .50	10.00 11.00	4.00 3.70	.... 3.70	.... 15.71	229
230	**Cumberland's Potato Phosphate** The Am. Ag. Chem. Co., New York. N. Y.	Claimed. Found.	1.00 1.30	.... 3.25	8.00 8.31	.... 8.31	.... 1.15	.... .23	10.00 9.46	4.00 4.34	.... 4.34	.... 16.13	230

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
231	**Farmers' Union Potato, Tobacco and Truck.....**	Claimed.	2.50	....	8.00	....	....	....	10.00	3.00	....	....	
	The Am. Ag. Chem. Co., New York. N. Y....	Found.	2.95	7.37	8.12	8.12	0.51	.10	8.63	2.58	2.58	18.17	231
232	**Reese's Challenge Crop Grower................**	Claimed.	1.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.....	Found.	1.22	3.05	8.38	8.38	1.98	.40	10.36	1.93	1.93	13.76	232
233	**Wheat Maker and Seeding Down.............**	Claimed.	0.50	....	8.00	....	....	....	10.00	2.50	....	....	
	The Ohio Farmers' Fert. Co., Columbus, O....	Found.	0.60	1.50	9.00	9.00	1.28	.26	10.28	2.87	2.87	13.63	233
234	**Garden City Superphosphate..................**	Claimed.	2.50	....	8.00	....	....	....	10.00	1.50	....	....	
	The Northwestern Fertilizing Co., Chicago, Ill.	Found.	2.70	6.75	8.44	8.44	3.39	.68	11.83	2.10	2.10	17.97	234
235	**Entire Phosphate ....**	Claimed.	1:00	....	7.00	....	2.00	....	10.00	1.00	....	....	
	The Western Union Chem. Co., Cleveland, O.	Found.	1.35	3.37	8.44	8.44	3.00	.60	11.44	1.49	1.49	13.90	235
236	**Ohio Farmer Phosphate ....**	Claimed.	1.00	....	10.00	....	2.00	....	12.00	1.00	....	....	
	The Western Union Chem. Co., C'eveland, O..	Found.	1.35	3.37	9.97	9.97	3.33	.67	13.30	1.25	1.25	15.26	236
240	**Corn and Wheat Grower.....................**	Claimed.	1.00	....	9.00	....	1.00	....	10.00	1.00	....	....	
	The Jones Fertilizing Co., Cincinnati, O....	Found.	1.25	3.12	8.51	8.51	1.08	.22	9.59	*1.35	1.55	13.40	240
241	**Jones' Reliable ....**	Claimed.	1.50	....	8.50	....	1.00	....	9.50	1.25	....	....	
	The Jones Fertilizing Co., Cincinnati, O....	Found.	1.75	4.37	9.53	9.53	1.98	.40	11.51	*1.54	1.77	16.07	241
244	**Raw Bone and Phosphate.....................**	Claimed.	2.00	....	10.00	....	4.00	....	16.00	1.50	....	....	
	James McCallum & Co., Dayton O..........	Found.	1.55	3.87	10.87	10.87	6.91	1.38	17.78	2.35	2.35	18.47	244

245	**Onion and Truck Fertilizer**....................	Claimed.	2.00	....	8.00	....	1.00	....	10.00	8.00	....	....	
	James McCallum & Co., Dayton, O..........	Found.	1.85	4.62	10.61	10.61	3.84	.77	14.45	7.19	7.19	23.19	245
246	**Miami Valley Grain Grower**....................	Claimed.	1.00	....	10.00	....	1.00	....	11.00	2.00	....	....	
	The Queen City Fertilizer Co., Cincinnati, O.	Found.	1.30	3.25	11.26	11.26	2.74	.55	14.00	*1.77	2.04	17.10	246
247	**Tobacco and Potato Grower**....................	Claimed.	1.00	....	8.00	....	1.00	....	9.00	4.00	....	....	
	The Queen City Fertilizer Co., Cincinnati, O.	Found.	1.05	2.62	10.74	10.74	2.11	.42	12.85	*3.07	3.53	17.31	247
251	**Our Special**	Claimed.	2.00	....	10.00	....	1.00	....	11.00	6.00	....	....	
	The E. Rauh & Sons Fert. Co., Indianapolis, Ind.	Found.	1.47	3.67	12.35	12.35	2.49	.50	14.84	*3.97	4.57	21.09	251
253	**Universal Phosphate**	Claimed.	1.50	....	8.50	....	2.50	....	11.00	1.00	....	....	
	The Farmers' Fert. Co., Indianapolis, Ind....	Found.	1.10	2.75	10.74	10.74	2.43	.49	13.17	0.96	.96	14.94	253
254	**Miami Phosphate**	Claimed.	1.00	....	9.00	....	1.00	....	11.00	3.00	....	....	
	James McCallum & Co., Dayton, O........	Found.	1.15	2.87	10.82	10.82	1.72	.35	12.54	2.76	2.76	16.80	254
255	**Peerless Lawn Fertilizer**......................	Claimed.	2.00	....	8.00	....	....	....	12.00	2.00	....	....	
	The Canton Fert. & Chem. Co., Canton, O..	Found.	1.90	4.75	8.63	8.63	2.56	.51	11.19	1.70	1.70	15.59	255
260	**Superior Superphosphate**......................	Claimed.	1.00	....	7.00	....	1.00	....	8.00	1.00	....	....	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	1.30	3.25	7.34	7.34	0.90	.18	8.24	1.62	1.62	12.39	260
264	**Potato Grower**	Claimed.	3.00	....	9.00	....	....	....	11.00	2.00	....	....	
	The Northwestern Fert. Co., Chicago, Ill....	Found.	3.30	8.25	10.23	10.23	3.46	.69	13.69	2.30	2.30	21.47	264
268	**Challenge Corn Grower**	Claimed.	2.50	....	8.00	....	....	....	10.00	1.50	....	....	
	The Northwestern Fert. Co., Chicago, Ill....	Found.	2.82	7.05	8.18	8.18	2.11	.42	10.29	1.70	1.70	17.35	268
269	**Potato Phosphate**	Claimed.	2.00	....	9.00	....	2.00	....	11.00	6.00	....	....	
	L. Frank & Sons, Zanesville, O..............	Found.	2.45	6.12	10.93	10.93	2.30	.46	13.23	*5.74	6.60	24.11	269
270	**Anti-Trust**	Claimed.	1.00	....	9.00	....	1.00	....	10.00	1.00	....	....	
	L. Frank & Sons, Zanesville, O..............	Found.	1.60	4.00	10.48	10.48	1.66	.33	12.14	0.95	.95	15.76	270
272	**All Soluble**	Claimed.	3.50	....	8.00	....	2.00	....	10.00	4.00	....	....	
	The Armour Fertilizer Works, Chicago, Ill..	Found.	4.50	11.25	8.44	8.44	1.66	.33	10.10	*4.43	5.09	25.11	272

† From animal matter.

* From sulphate.

TABLE I.—Mixed Fertilizers, with Potash—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
273	**Acidulated Bone and Potash**..................	Claimed.	1.00	....	10.00	....	....	....	12.00	1.00	....	....	
	The Northwestern Fert. Co., Chicago, Ill....	Found.	1.95	4.87	10.29	10.29	3.07	.62	13.36	1.22	1.22	17.00	273
275	**Cleveland Dryer's Forest City Buckeye Phos**....	Claimed.	3.00	....	9.00	....	....	....	11.00	2.00	....	....	
	The Am. Ag. Chem. Co,. New York, N. Y.....	Found.	3.15	7.87	9.84	9.84	3.52	.71	13.36	2.14	2.14	20.56	275
276	**Packers' Union Animal Corn Fertilizer**........	Claimed.	3.00	....	9.00	....	....	....	11.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	2.60	6.50	9.76	9.76	1.85	.37	11.61	2.82	2.82	19.45	276
277	**Packers' Union Universal Fertilizer**..........	Claimed.	1.00	....	8.00	....	....	....	10.00	4.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.25	3.12	8.06	8.06	2.94	.59	11.00	4.45	4.45	16.22	277
278	**Packers' Union Amer. Wheat and Rye Grower**	Claimed.	1.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.20	3.00	8.64	8.64	3.00	.60	11.64	2.53	2.53	14.77	278
279	**M. E. Wheeler's Corn Fertilizer**..............	Claimed.	2.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	2.55	6.37	8.82	8.82	3.13	.63	11.95	2.78	2.78	18.60	279
281	**Spot Cash Fertilizer**	Claimed.	2.00	....	10.00	....	2.00	....	12.00	2.00	....	....	
	The James McCallum Co., Dayton, O......	Found.	2.45	6.12	11.26	11.26	2.49	.50	13.75	1.56	1.56	19.44	281
282	**German Phosphate**	Claimed.	1.50	....	8.50	....	2.50	....	11.00	3.00	....	....	
	The Farmers' Fert. Co., Indianapolis, Ind....	Found.	1.30	3.25	9.13	9.13	2.17	.44	11.30	*2.03	2.33	15.15	282
284	**Capital Tobacco Food**	Claimed.	1.00	....	8.00	....	1.00	....	9.00	4.00	....	....	
	The Cincinnati Phos. Co., Sta P., Cincinnati, O.	Found.	0.90	2.25	9.79	9.79	5.05	1.01	14.84	3.28	3.28	16.33	284

286	**Fruit and Root Crop Special**..................	Claimed.	2.00	....	8.00	....	2.00	....	10.00	5.00	....	....	286
	The Armour Fertilizer Works, Chicago, Ill..	Found.	2.85	7.12	8.24	8.24	0.51	.10	8.75	4.16	4.16	19.62	
287	**Special Tobacco Grower**......................	Claimed.	1.00	....	8.00	....	1.00	....	9.00	1.50	....	....	287
	The Louisville Fert. Co., Louisville, Ky....	Found.	1.05	2.62	7.80	7.80	0.70	.14	8.50	*1.52	1.75	12.31	
288	**Special Corn Grower**.........................	Claimed.	1.00	....	7.00	....	1.00	....	8.00	1.00	....	....	288
	The Louisville Fert. Co., Louisville, Ky....	Found.	1.15	2.87	6.11	6.11	1.79	.36	7.90	*1.23	1.41	10.75	
289	**Soluble Bone**	Claimed.	1.00	....	8.00	....	1.00	....	9.00	1.50	....	....	289
	The Louisville Fert. Co., Louisville, Ky....	Found.	1.10	2.75	8.99	8.99	1.21	.24	10.20	*1.37	1.58	13.56	
292	**Special Wheat Grower**........................	Claimed.	1.00	....	7.00	....	1.00	....	8.00	1.00	....	....	292
	The Louisville Fert. Co., Louisville, Ky....	Found.	1.05	2.62	7.79	7.79	0.96	.19	8.75	1.12	1.12	11.72	
297	**Pacific's Potato Phosphate**...................	Claimed.	1.00	....	8.00	....	....	....	10.00	4.00	....	....	297
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.30	3.25	7.93	7.93	3.07	.61	11.00	5.11	5.11	16.90	
298	**Quinnipiac's Climax Phosphate**................	Claimed.	1.25	....	8.00	....	....	....	10.00	2.00	....	....	298
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.30	3.25	8.00	8.00	3.25	.65	11.25	2.99	2.99	14.89	
299	**Quinnipiac's Special Potato**..................	Claimed.	1.00	....	8.00	....	....	....	10.00	4.00	....	....	299
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.30	3.25	8.38	8.38	2.87	.57	11.25	3.66	3.66	15.86	
300	**Quinnipiac's Corn and Wheat Grower**........	Claimed.	1.00	....	10.00	....	....	....	12.00	1.00	....	....	300
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.25	3.13	10.42	10.42	2.23	.45	12.65	1.12	1.12	15.12	
301	**Quinnipiac's Mohawk Fertilizer**...............	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	301
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.40	3.50	8.38	8.38	2.87	.57	11.25	1.25	1.25	13.70	
304	**Keystone Bone Phosphate**.....................	Claimed.	1.00	....	8.00	....	2.00	....	10.00	1.00	....	....	304
	S. M. Hess & Bro., Philadelphia, Pa...........	Found.	1.10	2.75	8.19	8.19	2.30	.46	10.49	1.18	1.18	12.58	
305	**Phosphate**	Claimed.	3.00	....	12.00	....	3.00	....	....	2.00	....	....	305
	The Akron Fertilizer Co., Akron, O........	Found.	1.65	4.12	13.11	13.11	1.53	.31	14.64	1.66	1.66	19.20	
309	**Champion Wheat and Corn Grower**............	Claimed.	2.00	....	12.00	....	1.00	....	13.00	2.00	....	....	309
	Swift & Company, Chicago, Ill..............	Found.	2.25	5.62	11.52	11.52	†2.87	1.43	14.39	2.30	2.30	20.87	

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
312	**Valley Phosphate**	Claimed.	4.00	....	7.00	....	2.00	....	9.00	1.50	....	....	
	J.L.& H.Stadler Rend. & Fert. Co., Cleveland, O.	Found.	2.50	6.25	9.02	9.02	2.68	.54	11.70	3.35	3.35	19.16	312
314	**Valley Potato Manure**........................	Claimed.	3.00	....	6.00	....	2.00	....	9.00	5.00	....	....	
	J.L.& H.Stadler Rend. & Fert. Co., Cleveland, O.	Found.	2.10	5.25	7.44	7.44	3.05	.61	10.49	7.10	7.10	20.40	314
318	**Williams & Clark's Prolific Crop Producer**......	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.30	3.25	7.80	7.80	1.98	.40	9.78	1.23	1.23	12.68	318
319	**Wheat and Clover**............................	Claimed.	1.00	....	9.00	....	1.00	....	10.00	4.00	....	....	
	The Scientific Fertilizer Co., Pittsburg, Pa..	Found.	1.65	4.12	8.25	8.25	1.72	.35	9.97	3.34	3.34	16.06	319
322	**Common Sense**	Claimed.	2.00	....	6.00	....	1.00	....	7.00	1.00	....	....	
	The American Reduction Co., Pittsburg, Pa.	Found.	2.15	5.37	6.21	6.21	1.40	.28	7.61	0.66	.66	12.52	322
323	**Vegetable Manure**	Claimed.	3.00	....	6.00	....	1.00	....	7.00	6.00	....	....	
	The American Reduction Co., Pittsburg, Pa.	Found.	2.85	7.12	5.82	5.82	1.79	.36	7.61	2.89	2.89	16.19	323
325	**Wheat and Grass Manure**	Claimed.	1.00	....	8.00	....	2.00	....	10.00	2.00	....	....	
	S. M. Hess & Bro., Philadelphia, Pa.........	Found.	1.35	3.37	8.18	8.18	1.21	.24	9.39	1.77	1.77	13.56	325
326	**Four Fold**	Claimed.	2.00	....	8.00	....	1.00	....	9.00	2.00	....	....	
	Walker, Stratman & Co., Pittsburg, Pa......	Found.	1.35	3.37	6.90	6.90	2.05	.41	8.95	1.97	1.97	12.65	326
327	**Potato Special**	Claimed.	3.00	....	8.00	....	2.00	....	10.00	6.00	....	....	
	Walker, Stratman & Co., Pittsburg, Pa......	Found.	3.05	7.62	6.33	6.33	4.22	.85	10.55	5.61	5.61	20.41	327

328	Meat, Blood and Bone with Potash............	Claimed.	4.00	....	8.00	....	2.00	....	10.00	8.00	....	....	
	Walker, Stratman & Co., Pittsburg, Pa......	Found.	3.90	9.75	6.91	6.91	3.64	.73	10.55	8.46	8.46	25.85	328
331	Clark's Cove Defiance Complete Manure........	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.....	Found.	1.10	2.75	7.35	7.35	2.11	.42	9.46	1.06	1.06	11.58	331
332	Clark's Cove Potato Phosphate...............	Claimed.	1.00	....	8.00	....	....	....	10.00	4.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.....	Found.	1.30	3.25	9.84	9.84	2.36	.47	12.20	3.95	3.95	17.51	332
333	Zell's Little Giant	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.....	Found.	1.55	3.87	7.16	7.16	1.34	.27	8.50	1.31	1.31	12.61	333
336	Ammoniated Phosphate	Claimed.	1.00	....	7.00	....	2.00	....	9.00	1.00	....	....	
	The Tuscarora Fertilizer Co., Chicago, Ill.....	Found.	1.35	3.37	7.35	7.35	1.79	.36	9.14	1.77	1.77	12.85	336
337	Tuscarora Standard	Claimed.	2.00	....	8.00	....	2.00	....	10.00	2.00	....	....	
	The Tuscarora Fertilizer Co., Chicago, Ill...	Found.	2.40	6.00	8.57	8.57	2.56	.51	11.13	2.22	2.22	17.30	337
338	Big Four	Claimed.	2.00	....	7.00	....	2.00	....	9.00	4.00	....	....	
	The Tuscarora Fertilizer Co., Chicago, Ill...	Found.	2.14	5.35	7.11	7.11	1.98	.40	9.09	*4.53	5.21	18.07	338
340	Tuscarora Potato	Claimed.	2.00	....	8.00	....	2.00	....	12.00	10.00	....	....	
	The Tuscarora Fertilizer Co. Chicago, Ill...	Found.	2.15	5.37	8.14	8.14	1.26	.25	9.40	*9.52	10.95	24.71	340
341	M. E. Wheeler's Potato Manure...............	Claimed.	2.50	....	8.00	....	....	....	10.00	3.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.....	Found.	3.20	8.00	9.40	9.40	2.17	.43	11.57	3.76	3.76	21.59	341
343	Big Bonanza	Claimed.	2.00	....	9.00	....	1.00	....	10.00	4.00	....	....	
	Walker, Stratman & Co., Pittsburg, Pa......	Found.	2.40	6.00	7.80	7.80	2.62	.53	10.42	3.34	3.34	17.67	343
344	Beef, Blood and Bone........................	Claimed.	2.00	....	10.00	....	1.00	....	11.00	2.00	....	....	
	The Continental Fert. Co., Nashville, Tenn..	Found.	1.90	4.75	9.98	9.98	1.02	.21	11.00	1.90	1.90	16.84	344
345	Dutch Guano	Claimed.	1.00	....	7.00	....	1.00	....	8.00	1.00	....	....	
	L. Frank & Sons, Zanesville, O.............	Found.	1.20	3.00	8.63	8.63	1.34	.27	9.97	0.71	.71	12.61	345
347	Miami Valley Phosphate......................	Claimed.	2.00	....	10.00	....	1.00	....	11.00	2.00	....	....	
	The Jones Fertilizing Co., Cincinnati, O.......	Found	2.25	5.62	10.43	10.43	1.46	.29	11.89	*1.97	2.27	18.61	347

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
348	**Tobacco and Potato Grower**	Claimed.	2.00	....	10.00	....	1.00	....	11.00	4.00	....	....	
	The Jones Fertilizing Co., Cincinnati, O.......	Found.	2.30	5.75	9.47	9.47	1.66	.33	11.13	*4.28	4.92	20.47	348
349	**Harvest King**	Claimed.	1.50	....	8.00	....	....	....	....	2.00	....	....	
	The Kaufman Fert. Co., Indianapolis, Ind...	Found.	1.07	2.67	7.03	7.03	1.08	.21	8.11	1.33	1.33	11.24	349
350	**Banner Crop Grower**	Claimed.	1.00	....	7.00	....	....	....	....	1.00	....	....	
	The Kaufman Fert. Co., Indianapolis, Ind...	Found.	1.05	2.62	7.60	7.60	1.15	.23	8.75	0.87	.87	11.32	350
351	**Bone, Tankage and Potash**.....................	Claimed.	0.50	....	7.00	....	....	....	....	0.50	....	....	
	The Kaufman Fert. Co., Indianapolis, Ind...	Found.	0.65	1.62	7.04	7.04	0.57	.12	7.61	0.73	.73	9.51	351
352	**Special Potato and Tobacco Fertilizer**.........	Claimed.	2.00	....	6.00	....	....	....	....	6.00	....	....	
	The Kaufman Fert. Co., Indianapolis, Ind.	Found.	1.95	4.87	8.12	8.12	0.51	.10	8.63	5.92	5.92	19.01	352
354	**Globe Soluble Vegetable Manure**................	Claimed.	2.00	....	8.00	....	....	....	....	5.00	....	....	
	The Globe Fertilizer Co., Louisville, Ky......	Found.	2.05	5.12	9.91	9.91	1.98	.40	11.89	4.76	4.76	20.19	354
356	**Niagara's Wheat and Corn Producer**..........	Claimed.	1.50	....	9.00	....	....	....	11.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y......	Found.	1.70	4.25	11.19	11.19	1.08	.22	12.27	1.60	1.60	17.26	356
357	**Superphosphate**	Claimed.	1.00	....	10.00	....	....	....	....	2.00	....	....	
	The Belmont Phosphate Co., Colerain, O....	Found.	1.00	2.50	10.17	10.17	2.56	.51	12.73	*2.04	2.35	15.53	357
359	**Special Tobacco Grower**	Claimed.	1.00	....	8.00	....	1.00	....	9.00	1.50	....	....	
	The Continental Fert. Co., Nashville, Tenn....	Found.	1.25	3.12	9.34	9.34	1.53	.31	10.87	*1.56	1.79	14.56	359

361	**Hamm's Special**	Claimed.	3.00	....	10.00	....	3.00	....	13.00	2.00	....	....	
	The M. Hamm Co., Washington C. H., O.	Found.	2.10	5.25	12.98	12.98	0.64	.13	13.62	1.72	1.72	20.08	361
366	**Potato, Tobacco and Corn Fertilizer**	Claimed.	2.00	....	8.00	....	1.00	....	9.00	5.00	....	....	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	2.35	5.87	8.18	8.18	0.90	.18	9.08	*4.76	5.47	19.70	366
367	**Improved Superphosphate**	Claimed.	1.00	....	10.00	....	2.00	....	12.00	1.00	....	....	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	1.25	3.12	9.98	9.98	1.40	.28	11.38	1.43	1.43	14.81	367
369	**Dahl's Special**	Claimed	3.00	....	10.00	....	6.00	....	16.00	2.00	....	....	
	Dahl & Miller, Washington C. H., O.	Found.	4.00	10.00	9.28	9.28	†5.81	2.90	15.09	*2.18	2.51	24.69	369
370	**Corn and Wheat Grower**	Claimed.	1.00	....	10.00	....	2.00	....	12.00	1.00	....	....	
	Dahl & Miller, Washington C. H., O.	Found.	1.15	2.87	11.83	11.83	2.30	.46	14.13	1.31	1.31	16.47	370
374	**Blood and Bone Guano**	Claimed.	1.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Rochester Fert. Works, Rochester, N. Y.	Found.	1.15	2.87	8.37	8.37	0.77	.15	9.14	2.33	2.33	13.72	374
375	**Blood and Bone XX**	Claimed.	1.00	....	8.00	....	....	....	10.00	4.00	....	....	
	The Rochester Fert. Works, Rochester, N. Y.	Found.	1.20	3.00	8.19	8.19	1.02	.21	9.21	3.99	3.99	15.39	375
380	**Capital Special Club Formula**	Claimed.	1.00	....	12.00	....	1.00	....	13.00	3.00	....	....	
	The Cin'ti Phosphate Co., Sta. P., Cin'ti, O.	Found.	1.80	4.50	12.15	12.15	2.30	.46	14.45	*3.30	3.80	20.91	380
381	**Corn and Potato Fertilizer**	Claimed.	2.00	....	9.00	....	2.00	....	11.00	3.00	....	....	
	The Pittsburg Prov. & Pack. Co., Pittsb'g, Pa.	Found.	1.85	4.62	7.15	7.15	†3.00	1.50	10.15	*2.93	3.37	16.64	381
382	**Keystone Fertilizer**	Claimed.	2.00	....	9.00	....	2.00	....	11.00	1.50	....	....	
	The Pittsburg Prov. & Pack. Co., Pittsb'g, Pa.	Found.	1.80	4.50	6.45	6.45	†5.12	2.56	11.57	*0.96	1.10	14.61	382
386	**Grain and Grass Fertilizer**	Claimed.	2.00	....	10.00	....	1.00	....	11.00	2.00	....	....	
	The International Seed Co., Rochester, N. Y.	Found.	2.35	5.87	11.32	11.32	1.66	.33	12.98	2.37	2.37	19.89	386
387	**Potato and Truck Manure**	Claimed.	1.50	....	8.00	....	1.00	....	9.00	7.00	....	....	
	The International Seed Co., Rochester, N. Y.	Found.	1.70	4.25	8.89	8.89	1.98	.40	10.87	7.33	7.33	20.87	387
393	**Bradley's Complete Manure for Potatoes & Veg.**	Claimed.	4.00	....	8.00	....	....	....	10.00	7.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	3.60	9.00	9.33	9.33	2.56	.51	11.89	6.59	6.59	25.43	393

† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
395	**Truckers' Joy**	Claimed.	5.00	....	8.00	....	1.00	....	9.00	6.00	....	....	
	The Newport Fertilizer Co., Philadelphia, Pa.	Found.	3.35	8.37	7.03	7.03	3.39	.68	10.42	5.33	5.33	21.41	395
396	**Rectified Phosphate**	Claimed.	4.00	....	7.00	....	1.00	....	8.00	5.00	....	....	
	The Newport Fertilizer Co., Philadelphia, Pa.	Found.	2.95	7.37	5.49	5.49	3.90	.78	9.39	6.84	6.84	20.48	396
397	**Globe Grain Grower**	Claimed.	0.50	....	9.00	....	....	....	....	1.50	....	....	
	The Globe Fertilizer Co., Louisville, Ky......	Found.	0.50	1.25	11.63	11.63	0.51	.10	12.14	0.66	.66	13.64	397
398	**Big Four Tobacco Grower**	Claimed.	2.00	....	8.00	....	....	....	....	2.00	....	....	
	The Globe Fertilizer Co., Louisville, Ky......	Found.	1.10	2.75	10.16	10.16	0.51	.10	10.67	*1.77	2.04	15.05	398
400	**Braden Formula**	Claimed.	1.00	....	11.00	....	....	....	....	3.00	....	....	
	The Globe Fertilizer Co., Louisville, Ky......	Found.	1.00	2.50	10.87	10.87	0.83	.17	11.70	2.72	2.72	16.26	400
401	**Critchfield Fish Guano**	Claimed.	1.50	....	9.00	....	1.00	....	10.00	2.00	....	....	
	The E. P. Critchfield Co., Sta. P., Cin'ti, O...	Found.	1.65	4.12	9.75	9.75	3.36	.67	13.11	*1.79	2.06	16.60	401
403	**Bone, Blood and Potash**........................	Claimed.	5.00	....	8.00	....	2.00	....	10.00	7.00	....	....	
	The Armour Fertilizer Works, Chicago, Ill...	Found.	5.12	12.80	8.30	8.30	1.85	.37	10.15	*6.90	7.94	29.41	403
404	**Pittsburg Guano**	Claimed.	1.50	....	8.00	....	1.00	....	9.00	1.00	....	....	
	The American Reduction Co., Pittsburg, Pa..	Found.	2.10	5.25	7.42	7.42	1.08	.22	8.50	1.12	1.12	14.01	404
406	**Eureka Phosphate**	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Western Chemical Co., Chicago, Ill....	Found.	1.35	3.37	7.03	7.03	3.00	.60	10.03	1.58	1.58	12.58	406

407	Standard Phosphate	Claimed.	2.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Western Chemical Co., Chicago, Ill.	Found.	1.90	4.75	8.70	8.70	3.25	.65	11.95	2.39	2.39	16.49	407
409	World of Good Superphosphate	Claimed.	2.50	....	8.00	....	....	....	10.00	1.50	....	....	
	The Packers' Fertilizer Asso., Chicago, Ill.	Found.	2.60	6.50	9.52	9.52	2.49	.50	12.01	2.04	2.04	18.56	409
413	Top Notch Brand	Claimed.	0.75	....	11.00	....	1.00	....	12.00	0.25	....	....	
	The Newport Fertilizer Co., Philadelphia, Pa.	Found.	0.90	2.25	10.17	10.17	4.47	.89	14.64	0.27	.27	13.58	413
414	Bucyrus Guano	Claimed.	1.00	....	8.00	....	1.00	....	9.00	4.00	....	....	
	The Bucyrus Fertilizer Co., Bucyrus, O.	Found.	1.15	2.87	5.87	5.87	†4.10	2.05	9.97	4.39	4.39	15.18	414
415	Thomas' Wheat and Corn Fertilizer	Claimed.	1.00	....	9.00	....	2.00	....	11.00	3.00	....	....	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	1.35	3.37	10.68	10.68	0.51	.10	11.19	2.78	2.78	16.93	415
416	Potato and Tobacco Food	Claimed.	1.00	....	8.00	....	1.00	....	9.00	4.00	....	....	
	The E. P. Critchfield Co., Sta. P., Cin'ti, O.	Found.	1.10	2.75	10.82	10.82	2.74	.55	13.56	*3.51	4.04	18.16	416
418	Empire Guano	Claimed.	2.00	....	8.00	....	1.50	....	9.50	2.00	....	....	
	The Rasin-Monumental Co., Baltimore, Md.	Found.	2.45	6.12	7.23	7.23	4.02	.81	11.25	*1.83	2.10	16.26	418
419	Ohio Fish Special	Claimed.	1.00	....	8.00	....	1.50	....	9.50	2.00	....	....	
	The Rasin-Monumental Co., Baltimore, Md.	Found.	1.30	3.25	8.19	8.19	3.00	.60	11.19	1.41	1.41	13.45	419
421	Zell's Ammoniated Bone Superphosphate	Claimed.	2.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	2.15	5.37	8.51	8.51	3.00	.60	11.51	2.20	2.20	16.68	421
422	Grain King	Claimed.	1.00	....	9.00	....	1.00	....	10.00	4.00	....	....	
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	1.25	3.12	7.99	7.99	1.53	.31	9.52	1.49	1.49	12.91	422
423	Button Bone	Claimed.	2.00	....	10.00	....	2.00	....	12.00	3.00	....	....	
	The Alliance Fertilizer Co., Alliance, O.	Found.	1.60	4.00	9.33	9.33	2.62	.52	11.95	2.62	2.62	16.47	423
424	Bone Black Phosphate and Potash	Claimed.	1.00	....	8.00	....	2.00	....	10.00	2.00	....	....	
	The Alliance Fertilizer Co., Alliance, O.	Found.	1.05	2.62	6.08	6.08	4.53	.91	10.61	3.08	3.08	12.69	424
426	Packers' Union Potato Manure	Claimed.	2.50	....	8.00	....	....	....	10.00	6.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	2.70	6.75	9.28	9.28	1.85	.37	11.13	5.57	5.57	21.97	426

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
427	**Indian Brand Tobacco and Potato Fertilizer...**	Claimed.	3.00	....	9.00	....	1.00	....	10.00	5.00	....	....	427
	The Jarecki Chem. Co., Sandusky & Cin'ti, O.	Found.	3.05	7.62	8.58	8.58	3.25	.65	11.83	*4.61	5.30	22.15	
432	**Electric Guano**	Claimed.	1.00	....	8.00	....	2.00	....	10.00	2.00	....	....	432
	The International Seed Co., Rochester, N. Y..	Found.	1.40	3.50	9.14	9.14	1.66	.33	10.80	2.37	2.37	15.34	
434	**Grain and Grass Grower**	Claimed.	1.00	....	7.00	....	1.00	....	....	1.00	....	....	434
	The Buckeye Fertilizer Co., Columbus, O....	Found.	1.35	3.37	6.90	6.90	3.00	.60	9.90	*1.16	1.33	12.20	
436	**P. A. P. for Potatoes and Truck**................	Claimed.	1.00	....	10.00	....	2.00	....	12.00	1.00	....	....	436
	The Royal Fertilizer Co., Cleveland, O.......	Found.	1.45	3.62	11.13	11.13	2.23	.45	13.36	1.29	1.29	16.49	
441	**Ammoniated Bone Superphosphate**............	Claimed.	2.00	....	8.00	....	2.00	....	10.00	2.00	....	....	441
	S. M. Hess & Bro., Philadelphia, Pa..........	Found.	2.25	5.62	9.33	9.33	1.98	.40	11.31	2.33	2.33	17.68	
442	**Special Compound**	Claimed.	1.00	....	8.00	....	2.00	....	10.00	4.00	....	....	442
	S. M. Hess & Bro., Philadelphia, Pa..........	Found.	1.25	3.12	9.02	9.02	2.49	.50	11.51	4.49	4.49	17.13	
445	**Sure Crop**	Claimed.	1.00	....	9.00	....	2.00	....	11.00	2.00	....	....	445
	The Bowker-Fertilizer Co., Cincinnati, O.....	Found.	1.30	3.25	9.03	9.03	2.74	.55	11.77	4.72	4.72	17.55	
447	**Wheat Grower No. 1**..........................	Claimed.	2.50	....	10.00	....	3.00	....	13.00	3.00	....	....	447
	The Seneca Fertilizer Works, Tiffin, O......	Found.	3.30	8.25	8.42	8.42	†5.58	2.79	14.00	*3.57	4.11	23.57	
448	**Potato and Vegetable Manure**................	Claimed.	1.50	....	8.00	....	2.00	....	10.00	6.00	....	....	448
	The Seneca Fertilizer Works, Tiffin, O......	Found.	2.15	5.37	8.70	8.70	1.79	.36	10.49	*5.86	6.74	21.17	

449	**All Crop Special**	Claimed.	1.50	....	10.00	....	1.00	....	11.00	1.00	....	....	
	The Seneca Fertilizer Works, Tiffin, O.	Found.	2.00	5.00	9.92	9.92	3.13	.63	13.05	*1.76	2.02	17.57	449
450	**Raw Bone and Potash**	Claimed.	2.00	....	16.00	....	....	....	16.00	3.00	....	....	
	The Alliance Fertilizer Co., Alliance, O.	Found.	2.40	6.00	10.56	10.56	†10.61	5.30	21.17	3.30	3.30	25.16	450
451	**Potato, Tobacco and Truck Guano**	Claimed.	1.00	....	6.00	....	1.00	....	7.00	6.00	....	....	
	The Newport Fertilizer Co., Philadelphia, Pa.	Found.	1.35	3.37	6.39	6.39	2.30	.46	8.69	5.70	5.70	15.92	451
452	**Anti-Trust Corn and Wheat Grower**	Claimed.	0.75	....	11.00	....	2.00	....	13.00	1.25	....	....	
	The Newport Fertilizer Co., Philadelphia, Pa.	Found.	1.15	2.87	8.06	8.06	2.49	.50	10.55	1.74	1.74	13.17	452
454	**Century**	Claimed.	2.00	....	10.00	....	2.00	....	12.00	2.00	....	....	
	L. Frank & Sons, Zanesville, O.	Found.	1.65	4.12	10.56	10.56	2.87	.58	13.43	1.79	1.79	17.05	454
457	**Special Vegetable Grower**	Claimed.	2.00	....	8.00	....	1.00	....	9.00	3.00	....	....	
	The Muskingum Valley Fert. Co., Marietta, O	Found.	1.60	4.00	7.61	7.61	3.58	.72	11.19	2.28	2.28	14.61	457
458	**Superphosphate and Potash**	Claimed.	1.50	....	8.00	....	1.00	....	9.00	2.00	....	....	
	The Muskingum Valley Fert. Co., Marietta, O.	Found.	1.45	3.62	7.93	7.93	2.81	.56	10.74	1.65	1.65	13.76	458
460	**Crocker's Harvest Jewel**	Claimed.	2.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	2.20	5.50	9.21	9.21	1.92	.38	11.13	2.31	2.31	17.40	460
466	**Guano**	Claimed.	1.00	....	8.00	....	1.00	....	9.00	4.00	....	....	
	The Schaal-Sheldon Fert. Co., Erie, Pa.	Found.	1.25	3.12	8.76	8.76	2.17	.43	10.93	4.01	4.01	16.32	466
468	**Bone Superphosphate**	Claimed.	2.00	....	10.00	....	2.00	....	12.00	2.00	....	....	
	The Lackawanna Animal Prod. Co., Moosic, Pa.	Found.	1.70	4.25	10.42	10.42	1.08	.22	11.50	1.56	1.56	16.45	468
472	**Raw Bone Phosphate**	Claimed.	2.00	....	9.00	....	1.00	....	10.00	4.00	....	....	
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	2.20	5.50	7.93	7.93	2.56	.51	10.49	3.91	3.91	17.85	472
473	**Banner Phosphate**	Claimed.	1.00	....	8.00	....	1.00	....	9.00	2.00	....	....	
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	1.40	3.50	7.03	7.03	1.34	.27	8.37	1.97	1.97	12.77	473
474	**Potato Manure**	Claimed.	3.00	....	8.00	....	2.00	....	10.00	6.00	....	....	
	The Allegheny City Fert. Wks., Allegheny, Pa	Found.	3.60	9.00	7.03	7.03	3.06	.61	10.09	4.41	4.41	21.05	474

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble						
			Percent	Value	Percent	Value	Percent	Value	Total Percent	Percent	Value		
479	**Cumberland's Guano**	Claimed.	1.25	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	1.30	3.25	8.43	8.43	1.80	.36	10.23	2.53	2.53	14.57	479
480	**Cumberland's Seeding Down**	Claimed.	1.00	....	7.00	....	....	....	9.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	1.45	3.62	6.71	6.71	1.40	.28	8.11	1.22	1.22	11.83	480
481	**Read's Farmers' Friend**	Claimed.	2.50	....	8.00	....	....	....	10.00	3.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	2.45	6.12	7.98	7.98	4.22	.85	12.20	3.03	3.03	17.98	481
482	**M. E. Wheeler's Royal Wheat Grower**	Claimed.	1.00	....	8.00	....	....	....	10.00	2.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	1.75	4.37	8.31	8.31	2.30	.46	10.61	2.33	2.33	15.47	482
483	**Williams & Clark's Corn and Wheat Special**	Claimed.	1.00	....	10.00	....	....	....	12.00	1.00	....	....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	1.35	3.37	10.69	10.69	2.42	.49	13.11	1.18	1.18	15.73	483
484	**Corn and Grain**	Claimed.	2.00	....	8.00	....	1.00	....	9.00	2.00	....	....	
	The Scientific Fertilizer Co., Pittsburg, Pa.	Found.	1.45	3.62	7.35	7.35	1.92	.39	9.27	2.82	2.82	14.18	484
485	**Grain Grower**	Claimed.	1.00	....	8.00	....	1.00	....	9.00	1.00	....	....	
	The Scientific Fertilizer Co., Pittsburg, Pa.	Found.	1.20	3.00	6.44	6.44	1.80	.36	8.24	1.33	1.33	11.13	485
488	**Complete Fertilizer**	Claimed.	1.00	....	10.00	....	1.00	....	11.00	1.00	....	....	
	The Central Ohio Fert. Co., Mt. Vernon, O.	Found.	1.10	2.75	9.78	9.78	3.58	.72	13.36	1.47	1.47	14.72	488
493	**Progress Corn and Wheat Grower**	Claimed.	2.00	....	9.00	....	....	....	....	1.00	....	....	
	The Globe Fertilizer Co., Louisville, Ky.	Found.	2.05	5.12	10.61	10.61	1.28	.26	11.89	1.58	1.58	17.57	493

501	**Zell's Economizer** .... The Am. Ag. Chem. Co., New York, N. Y.....	Claimed. Found.	1.00 1.45	.... 3.62	8.00 9.27	.... 9.27	.... 3.06	.... .61	10.00 12.33	2.00 2.14	.... 2.14	.... 15.64	501
502	**True Balance Grain and Grass Fertilizer**........ W. H. Kirk, Wellington, O..................	Claimed. Found.	1.00 1.05	.... 2.62	10.00 10.16	.... 10.16	1.50 2.30	.... .46	11.50 12.46	1.00 1.12	.... 1.12	.... 14.36	502
511	**Ammoniated Bone Black** .... The Buffalo Fertilizer Co., Buffalo, N. Y......	Claimed. Found.	0.50 0.70	.... 1.75	8.00 8.38	.... 8.38	1.00 3.06	.... .61	9.00 11.44	2.50 2.74	.... 2.74	.... 13.48	511
512	**Buckeye Wheat Grower** .... The Bucyrus Fertilizer Co., Bucyrus, O......	Claimed. Found.	1.00 1.15	.... 2.87	10.00 8.58	.... 8.58	1.00 3.06	.... .61	11.00 11.64	1.00 0.95	.... 0.95	.... 13.01	512
516	**Farmers' Union Club and Grange**............. The Am. Ag. Chem. Co., New York, N. Y.....	Claimed. Found.	1.00 1.25	.... 3.12	7.00 8.32	.... 8.32	.... 2.04	.... .41	9.00 10.36	1.00 1.70	.... 1.70	.... 13.55	516
517	**Frog Brand Guano** .... The Newport Fert. Co., Philadelphia, Pa.....	Claimed. Found.	1.00 1.10	.... 2.75	9.00 10.93	.... 10.93	1.00 2.30	.... .46	10.00 13.23	3.00 1.91	.... 1.91	.... 16.05	517
518	**Herrick's Bone and Potash**.................... The Western Union Chem. Co., Cleveland, O.	Claimed. Found.	2.00 2.30	.... 5.75	8.00 9.34	.... 9.34	2.00 1.79	.... .36	12.00 11.13	2.00 2.33	.... 2.33	.... 17.78	518
519	**Potato and Truck Manure** .... S. M. Hess & Bro., Philadelphia, Pa.........	Claimed. Found.	3.00 3.50	.... 8.75	8.00 8.24	.... 8.24	2.00 1.15	.... .23	10.00 9.39	6.00 6.34	.... 6.34	.... 23.56	519
523	**Corn, Oats and Wheat Grower**............... The Marietta Bone and Phos. Co., Marietta, O.	Claimed. Found.	1.50 2.30	.... 5.75	8.00 8.89	.... 8.89	2.00 4.86	.... .97	10.00 13.75	2.00 *2.33	.... 2.68	.... 18.29	523
524	**Potato and Truck Special** .... The Marietta Bone and Phos. Co., Marietta, O.	Claimed. Found.	3.00 3.35	.... 8.37	8.00 9.01	.... 9.01	2.00 2.56	.... .51	10.00 11.57	5.00 *3.93	.... 4.52	.... 22.41	524
527	**Horse Guano** .... The Marietta Bone and Phos. Co., Marietta, O.	Claimed. Found.	1.50 1.55	.... 2.87	8.00 9.47	.... 9.47	2.00 4.47	.... .89	10.00 13.94	1.50 *1.45	.... 1.67	†.... 15.90	527
528	**XX Special** .... The Marietta Bone and Phos. Co., Marietta, O.	Claimed. Found.	1.00 1.05	.... 2.62	8.00 8.33	.... 8.33	2.00 2.17	.... .43	10.00 10.50	1.00 *1.00	.... 1.15	.... 12.53	528
530	**Walker's Excelsior Brand Plant Food**........... The Flower City Plant Food Co., Roch., N. Y.	Claimed. Found.	7.00 5.85	.... 14.62	12.00 13.20	.... 13.20	.... 1.95	.... .39	.... 15.15	11.00 *8.48	.... 9.75	.... 37.96	530

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† From animal matter.

* From sulphate.

TABLE I.—MIXED FERTILIZERS, WITH POTASH—Concluded.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found	Ammonia		Phosphoric Acid					Potash		Total Value	Record Number
					Available		Insoluble		Total Percent				
			Percent	Value	Percent	Value	Percent	Value		Percent	Value		
531	**Complete Plant Food**	Claimed.	1.00	....	10.00	....	1.00	....	11.00	1.00	...	....	
	The E. P. Critchfield Co., Cincinnati, O.	Found.	1.10	2.75	11.51	11.51	1.98	.40	13.49	*1.37	1.58	16.24	531
535	**Soluble Bone**	Claimed.	1.25	....	10.00	....	2.00	....	12.00	1.50	....	....	
	The Currie Fertilizer Co., Louisville, Ky.	Found.	1.45	3.62	11.51	11.51	1.85	.37	13.36	1.70	1.70	17.20	535
539	**Fish Guano**	Claimed.	1.00	....	7.00	....	1.00	....	8.00	1.00	....	....	
	The Buffalo Fertilizer Co., Buffalo, N. Y.	Found.	1.50	3.75	7.80	7.80	2.81	.56	10.61	1.41	1.41	13.52	539
540	**Buffalo Standard**	Claimed.	1.00	....	8.00	....	1.00	....	9.00	4.00	....	....	
	The Buffalo Fertilizer Co., Buffalo, N. Y.	Found.	1.05	2.62	8.63	8.63	2.11	.42	10.74	4.28	4.28	15.95	540
546	**Meat and Potash Fertilizer**	Claimed.	1.50	....	4.50	....	2.50	....	7.00	1.50	....	....	
	John Ruehle, Defiance, O.	Found.	1.60	4.00	5.18	5.18	†3.55	1.78	8.73	1.52	1.52	12.48	546
548	**Maumee Valley Fertilizer**	Claimed.	5.00	....	10.00	....	....	....	18.00	0.41	....	....	
	N. Rassell & Co., Toledo, O.	Found.	5.65	14.12	11.08	11.08	†5.68	2.84	16.76	0.44	.44	28.48	548
551	**John's Tax Payer**	Claimed.	1.00	....	8.00	....	1.00	....	9.00	1.00	....	....	
	The Seneca Fertilizer Works, Tiffin, O.	Found.	1.40	3.50	8.32	8.32	2.17	.43	10.49	*1.02	1.17	13.42	551
552	**Ammoniated Superphosphate**	Claimed.	1.00	....	8.00	....	1.50	....	9.50	1.00	....	....	
	The Rasin-Monumental Co., Baltimore, Md.	Found.	1.30	3.25	9.34	9.34	2.17	.43	11.51	1.47	1.47	14.49	552
556	**Wheat Grower**	Claimed.	2.00	....	10.00	....	....	....	....	2.00	....	....	
	The Globe Fertilizer Co., Louisville, Ky.	Found.	2.65	6.62	10.29	10.29	0.64	.13	10.93	1.82	1.82	18.86	556

560	**Standard Corn and Wheat Grower**.............	Claimed.	1.00	....	8.00	....	....	....	....	1.00	....	....	
	The Virginia-Carolina Chem. Co., Balt., Md..	Found.	1.25	3.12	9.72	9.72	2.11	.42	11.83	1.39	1.39	14.65	560
563	**High Grade Superphosphate of Bone**...........	Claimed.	1.50	....	9.00	....	2.00	....	11.00	1.50	....	....	
	D. Blocher & Co., Gettysburg, Pa.............	Found.	1.65	4.12	11.51	11.51	2.05	.41	13.56	1.74	1.74	17.78	563
566	**Farmers' Mixture**	Claimed.	1.00	....	9.00	....	2.00	....	11.00	2.00	....	....	
	The G. Ober & Sons Co., Baltimore ,Md......	Found.	1.30	3.25	9.92	9.92	1.21	.24	11.13	2.72	2.72	16.13	566

† From animal matter.

* From sulphate.

TABLE II.—MIXED FERTILIZERS, WITHOUT POTASH.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Total Value	Record Number
					Available		Insoluble		Total Percent		
			Percent	Value	Percent	Value	Percent	Value			
174	**Fish Guano**	Claimed.	1.50	.....	8.50	.....	2.50	.....	11.00	.....	
	The E. Rauh & Sons Fert. Co., Indianapolis, Ind.	Found.	1.52	3.80	9.28	9.28	2.30	.46	11.58	13.54	174
206	**Ammoniated Phosphate**	Claimed.	0.50	.....	8.00	.....	1.00	.....	9.00	.....	
	The Continental Fert. Co., Nashville, Tenn..	Found.	0.82	2.05	9.60	9.60	1.40	.28	11.00	11.93	206
208	**Ox Ammoniated Phosphate**	Claimed.	0.50	.....	8.00	.....	1.00	.....	9.00	....	
	The Tennessee Chem. Co., Nashville, Tenn..	Found.	0.60	1.50	8.51	8.51	1.21	.24	9.72	10.25	208
238	**Half and Half**	Claimed.	2.25	.....	8.00	.....	2.00	.....	14.00	.....	
	The Western Union Chem. Co., Cleveland, O.	Found.	3.25	8.12	7.41	7.41	4.99	1.00	12.40	16.53	238
243	**Jewel Phosphate**	Claimed.	1.00	.....	8.00	.....	1.00	.....	9.00	.....	
	The Jones Fertilizing Co., Cincinnati O.......	Found.	1.30	3.25	7.81	7.81	1.46	.29	9.27	11.35	243
259	**Guano Fertilizer**	Claimed.	2.00	.....	9.00	.....	2.00	.....	11.00	.....	
	The Pittsburg Prov. & Pack. Co., Pittsb'g, Pa.	Found.	2.02	5.05	5.25	5.25	4.47	.90	9.72	11.20	259
290	**Eagle Phosphate**	Claimed.	0.50	.....	8.00	.....	1.00	.....	9.00	.....	
	The Louisville Fert. Co., Louisville, Ky......	Found.	0.70	1.75	8.89	8.89	1.08	.22	9.97	10.86	290
310	**Ground Bone**	Claimed.	3.00	.....	.....	.....	.....	.....	20.00	.....	
	Michigan Carbon Works, Detroit, Mich......	Found.	3.50	8.75	8.76	8.76	11.64	2.33	20.40	19.84	310
313	**Bone and Meat Fertilizer**	Claimed.	2.75	.....	7.09	.....	3.84	.....	10.93	.....	
	The J. L. & H. Stadler R. & F. Co., Cleveland, O.	Found.	2.15	3.37	9.46	9.46	1.34	.27	10.80	13.10	313

321	**Acidulated Bone Meal**	Claimed.	2.00	.....	11.00	.....	.....	.....	18.00	.....	
	The Armour Fertilizer Works, Chicago, Ill.	Found.	2.65	6.62	12.13	12.13	0.77	.16	12.90	18.91	321
358	**Acidulated Bone**	Claimed.	2.00	.....	12.00	.....	.....	.....	14.00	.....	
	Geo. A. Bell, Wheelersburg, O.	Found.	2.60	6.50	11.69	11.69	4.10	.82	15.79	19.01	358
391	**Bone and Meat**	Claimed.	4.00	.....	.....	.....	.....	.....	16.00	.....	
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	3.25	8.12	7.74	7.74	†9.46	4.73	17.20	20.59	391
437	**Acidulated Bone**	Claimed.	1.00	.....	10.00	.....	.....	.....	12.00	.....	
	The Northwestern Fertilizing Co., Chicago, Ill.	Found.	1.35	3.37	11.32	11.32	2.43	.49	13.75	15.18	437
498	**Half Pure Raw Bone and Half Pure Bone Phos.**	Claimed.	1.50	.....	8.50	.....	11.00	.....	19.50	.....	
	The E. Rauh & Sons Fert. Co., Indianapolis, Ind.	Found.	1.60	4.00	9.69	9.69	7.80	1.56	17.49	15.25	498
507	**Bone Meal**	Claimed.	2.50	.....	.....	.....	.....	.....	19.00	.....	
	The Akron Fertilizer Co., Akron, O.	Found.	2.55	6.37	10.49	10.49	10.24	2.05	20.73	18.91	507
526	**Pure Ground Bone**	Claimed.	2.00	.....	.....	.....	.....	.....	20.00	.....	
	The Marietta Bone and Phos. Co., Marietta, O.	Found.	3.05	7.62	9.79	9.79	8.95	1.79	18.74	19.20	526
553	**Wheat Special**	Claimed.	0.50	.....	12.00	.....	.....	.....	.....	.....	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	1.05	2.62	11.45	11.45	2.94	.59	14.39	14.66	553

† From animal matter.

TABLE III.—DISSOLVED BONE.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Total Value	Record Number
					Available		Insoluble				
			Percent	Value	Percent	Value	Percent	Value	Total Percent		
37	**Ground Bone**	Claimed.	3.00	.....	.....	.....	.....	.....	20.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.....	Found.	3.60	9.00	9.53	9.53	†10.74	5.37	20.27	23.90	37
227	**Peerless Bone Meal**	Claimed.	2.75	.....	.....	.....	.....	.....	22.00	.....	
	The Canton Fert. & Chem. Co., Canton, O....	Found.	3.10	7.75	8.57	8.57	†13.56	6.78	22.13	23.10	227
283	**Bone Meal**	Claimed.	3.00	.....	.....	.....	.....	.....	20.00	.....	
	The Packers' Fert. Co., Sta. P., Cincinnati, O.	Found.	3.02	7.55	8.32	8.32	†14.84	7.42	23.16	23.29	283
360	**Pure Ground Bone**	Claimed.	3.00	.....	.....	.....	.....	.....	20.00	.....	
	The Northwestern Fert. Co., Chicago, Ill.....	Found.	3.55	8.87	13.43	13.43	†7.36	3.68	20.79	25.98	360
478	**Butcher Bone Meal**	Claimed.	4.00	.....	.....	.....	.....	.....	16.00	.....	
	The Allegheny City Fert. Wks., Allegheny, Pa	Found.	4.35	7.83	6.39	6.39	†7.04	3.52	13.43	17.74	478
505	**Chicago Bone Meal**	Claimed.	1.50	.....	.....	.....	.....	.....	25.00	.....	
	Packers' Fertilizer Association, Chicago, Ill..	Found.	1.55	3.87	16.65	16.65	†11.24	5.62	27.89	26.14	505

† From animal matter

TABLE IV.—ROCK PHOSPHATE.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
6	**Extra Superphosphate**	Claimed.	14.00	.....	.....	.....	.....	
	The Buckeye Fertilizer Co., Columbus, O.	Found.	14.27	14.27	2.36	16.63	14.27	6
9	**Acid Phosphate**	Claimed.	8.00	.....	.....	9.00	.....	
	The Canton Fertilizer & Chemical Co., Canton, O.	Found.	8.18	8.18	1.66	9.84	8.18	9
13	**Soluble Dissolved Bone**	Claimed.	14.00	.....	.....	16.00	.....	
	The Northwestern Fertilizing Co., Chicago, Ill.	Found.	14.97	14.97	1.85	16.82	14.97	13
17	**Security Phosphate**	Claimed.	14.00	.....	.....	15.00	.....	
	The Hardy Packing Co., Chicago, Ill.	Found.	14.46	14.46	2.23	16.69	14.46	17
29	**Garden City Phosphate**	Claimed.	14.00	.....	1.00	15.00	.....	
	Swift & Company, Chicago, Ill.	Found.	12.34	12.34	0.77	13.11	12.34	29
35	**Star Phosphate**	Claimed.	14.00	.....	2.00	16.00	.....	
	The Armour Fertilizer Works, Chicago, Ill.	Found.	16.24	16.24	0.19	16.43	16.24	35
40	**Bradley's Acid Phosphate**	Claimed.	10.00	.....	.....	12.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	11.76	11.76	0.64	12.40	11.76	40
45	**Pacific's Acid Phosphate**	Claimed.	10.00	.....	.....	12.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	11.48	11.48	0.98	12.46	11.48	45
50	**Read's Dissolved Bone**	Claimed.	12.00	.....	.....	14.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	12.79	12.79	1.08	13.87	12.79	50

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
55	Tuscarora Bone Phosphate	Claimed.	10.00	.....	3.00	12.00	.....	
	The Tuscarora Fertilizer Co., Chicago, Ill.	Found.	11.95	11.95	0.06	12.01	11.95	55
56	Acid Phosphate	Claimed.	14.00	.....	2.00	16.00	.....	
	The Tuscarora Fertilizer Co., Chicago, Ill.	Found.	13.43	13.43	0.06	13.49	13.43	56
59	Superior Phosphate	Claimed.	10.00	.....	.....	11.00	.....	
	The Ohio Farmers' Fertilizer Co., Columbus, O.	Found.	9.14	9.14	3.13	12.27	9.14	59
60	Alkaline Bone	Claimed.	14.00	.....	.....	15.00	.....	
	The Ohio Farmers' Fertilizer Co., Columbus, O.	Found.	15.22	15.22	1.34	16.56	15.22	60
67	Diamond Phosphate	Claimed.	14.00	.....	.....	15.00	.....	
	The Chicago Fertilizer Co., Chicago, Ill.	Found.	13.94	13.94	1.85	15.79	13.94	67
69	No. 1 Acid Phosphate	Claimed.	10.00	.....	.....	11.00	.....	
	The Chicago Fertilizer Co., Chicago, Ill.	Found.	11.51	11.51	1.85	13.36	11.51	69
70	Tennessee Phosphate	Claimed.	10.00	.....	.....	11.00	.....	
	The Abbott & Martin Rendering Co., Columbus, O.	Found.	11.24	11.24	2.49	13.73	11.24	70
71	Hercules Phosphate	Claimed.	14.00	.....	.....	15.00	.....	
	The Abbott & Martin Rendering Co., Columbus, O.	Found.	15.03	15.03	2.17	17.20	15.03	71
81	Big Seven H. G. Acid Phosphate	Claimed.	10.00	.....	.....	11.00	.....	
	Nelson Morris & Co., Chicago, Ill.	Found.	10.56	10.56	2.23	12.79	10.56	81

84	**Cleveland Dryer's XXX Phosphate**	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	13.88	13.88	1.21	15.09	13.88	84
88	**Standard's Dissolved Bone**	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	14.45	14.45	0.96	15.41	14.45	88
89	**Standard's Acid Phosphate**	Claimed.	10.00	.....	.....	12.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	11.88	11.88	0.83	12.71	11.88	89
92	**Acorn Acid Phosphate**	Claimed.	10.00	.....	.....	.....	.....	
	The Globe Fertilizer Co., Louisville, Ky.	Found.	10.74	10.74	0.57	11.31	10.74	92
97	**Fox A. A. Acid Phosphate**	Claimed.	10.00	.....	2.00	12.00	.....	
	The Fox Chemical Co., Louisville, Ky.	Found.	11.53	11.53	2.13	13.66	11.53	97
104	**Soluble Bone**	Claimed.	14.00	.....	2.00	16.00	.....	
	The Bowker Fertilizer Co., Cincinnati, O.	Found.	14.07	14.07	3.33	17.40	14.07	104
105	**Dissolved Bone**	Claimed.	10.00	.....	2.00	12.00	.....	
	The Bowker Fertilizer Co., Cincinnati, O.	Found.	10.24	10.24	3.25	13.49	10.24	105
106	**Cereal Phosphate**	Claimed.	10.00	.....	3.00	13.00	.....	
	The Armour Fertilizer Works, Chicago, Ill.	Found.	11.37	11.37	0.70	12.07	11.37	106
108	**Detrick's Monarch Phosphate**	Claimed.	10.00	.....	.....	12.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	12.00	12.00	0.58	12.58	12.00	108
114	**Cleveland Dryer's Horsehead Phosphate**	Claimed.	10.00	.....	.....	12.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	11.76	11.76	0.51	12.27	11.76	114
119	**Crocker's Dissolved Bone**	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	14.57	14.57	1.21	15.78	14.57	119
122	**Milsom's Dissolved Bone**	Claimed.	12.00	.....	.....	14.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	12.64	12.64	1.34	13.98	12.64	122
123	**Capital Wheat Grower**	Claimed.	14.00	.....	1.00	15.00	.....	
	The Cincinnati Phosphate Co., Sta. P., Cincinnati, O.	Found.	15.27	15.27	1.80	17.07	15.27	123
135	**C. O. D. Phosphate**	Claimed.	14.00	.....	1.00	15.00	.....	
	The Jarecki Chemical Co., Sandusky and Cincinnati, O.	Found.	15.54	15.54	2.30	17.84	15.54	135

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
138	**Acidulated Bone**	Claimed.	14.00	.....	1.00	15.00	.....	
	The Packers' Fertilizer Co., Cincinnati, O.	Found.	14.33	14.33	2.30	16.63	14.33	138
142	**Quick Acting Phosphate**	Claimed.	10.00	.....	.....	12.00	.....	
	The Northwestern Fertilizing Co., Chicago, Ill.	Found.	11.82	11.82	0.83	12.65	11.82	142
144	**Bradley's Soluble Dissolved Bone**	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	15.23	15.23	1.40	16.63	15.23	144
147	**Farmers' Union Dissolved Bone**	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	14.55	14.55	0.57	15.12	14.55	147
151	**Great Eastern's Dissolved Bone**	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	14.79	14.79	1.28	16.07	14.79	151
155	**High Grade Wheat and Grass Grower**	Claimed.	14.00	.....	1.00	15.00	.....	
	The Queen City Fertilizer Co., Cincinnati, O.	Found.	14.26	14.26	1.66	15.92	14.26	155
158	**Bradley's Dissolved Bone, Justice Brand**	Claimed.	12.00	.....	.....	14.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	12.79	12.79	1.15	13.94	12.79	158
160	**Crocker's Erie Fertilizer**	Claimed.	12.00	.....	.....	14.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	12.57	12.57	0.83	13.40	12.57	160
162	**M. E. Wheeler's Electrical Dissolved Bone**	Claimed.	14.00	.....	.....	16.00	.....	
	The Am Ag. Chem. Co., New York, N. Y.	Found.	14.43	14.43	0.57	15.00	14.43	162

163	**M. E. Wheeler's Unammoniated Wheat Grower**............	Claimed.	12.00	.....	.....	14.00	.....	163
	The Am. Ag. Chem. Co., New York, N. Y................	Found.	12.34	12.34	1.28	13.62	12.34	
164	**M. E. Wheeler's Wisdom's Choice**..........................	Claimed.	10.00	.....	.....	12.00	.....	164
	The Am. Ag. Chem. Co., New York, N. Y................	Found.	11.66	11.66	0.64	12.30	11.66	
166	**Williams & Clark's Dissolved Bone**.,.......................	Claimed.	10.00	.....	.....	12.00	.....	166
	The Am. Ag. Chem. Co., New York, N. Y................	Found.	10.98	10.98	1.72	12.70	10.98	
167	**Williams & Clark's Acorn Phosphate**......................	Claimed.	14.00	.....	.....	16.00	.....	167
	The Am. Ag. Chem. Co., New York, N. Y................	Found.	14.64	14.64	0.77	15.41	14.64	
170	**Globe Acid Phosphate**.......................................	Claimed.	14.00	.....	.....	.....	.....	170
	The Globe Fertilizer Co., Louisville, Ky..................	Found.	14.39	14.39	0.38	14.77	14.39	
171	**Ideal Phosphate**	Claimed.	10.00	.....	1.00	11.00	.....	171
	The E. Rauh & Sons Fertilizer Co., Indianapolis, Ind....	Found.	10.74	10.74	1.72	12.46	10.74	
172	**Red Star Phosphate**	Claimed.	14.00	.....	1.00	15.00	.....	172
	The E. Rauh & Sons Fertilizer Co., Indianapolis, Ind....	Found.	14.20	14.20	1.15	15.35	14.20	
177	**Dissolved Bone Phosphate**	Claimed.	16.00	.....	2.00	18.00	.....	177
	G. W. Rickard, Medina, O..................................	Found.	16.83	16.83	0.06	16.89	16.83	
178	**Economy Phosphate**	Claimed.	10.00	.....	2.00	12.00	.....	178
	G. W. Rickard, Medina, O..................................	Found.	11.93	11.93	0.57	12.50	11.93	
187	**Wolverine Phosphate**	Claimed.	10.00	.....	.....	12.00	.....	187
	Michigan Carbon Works, Detroit, Mich................	Found.	9.66	9.66	4.92	14.58	9.66	
191	**Acid Phosphate**	Claimed.	10.00	.....	.....	.....	.....	191
	Darling & Company, Chicago, Ill..........................	Found.	11.06	11.06	0.64	11.70	11.06	
193	**Clark's Cove Sovereign Acid Phosphate**....................	Claimed.	10.00	.....	.....	12.00	.....	193
	The Am. Ag. Chem. Co., New York, N. Y................	Found.	8.86	8.86	4.66	13.52	8.86	
196	**Crocker's Economical Phosphate**	Claimed.	10.00	.....	.....	12.00	.....	196
	The Am. Ag. Chem. Co., New York, N. Y................	Found.	9.87	9.87	3.13	13.00	9 87	
199	**Great Eastern's Unammoniated Wheat Special**	Claimed.	12.00	.....	.....	14.00	.....	199
	The Am. Ag. Chem. Co., New York, N. Y................	Found.	11.26	11.26	4.02	15.28	11.26	

TABLE IV.—ROCK PHOSPHATE—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
201	**Pacific's Dissolved Bone Phosphate of Lime**	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	14.90	14.90	0.96	15.86	14.90	201
204	**High Grade Dissolved Bone**	Claimed.	14.00	.....	1.00	15.00	.....	
	The Continental Fertilizer Co., Nashville, Tenn.	Found.	13.88	13.88	0.51	14.39	13.88	204
214	**Special Wheat Grower**	Claimed.	9.00	.....	1.00	10.00	.....	
	The Queen City Fertilizer Co., Cincinnati, O.	Found.	9.51	9.51	3.33	12.84	9.51	214
217	**Pure Acid Phosphate**	Claimed.	16.00	.....	2.00	18.00	.....	
	The Ohio Bone and Phosphate Co., Orrville, Ohio	Found.	16.07	16.07	1.53	17.60	16.07	217
222	**Acid Phosphate**	Claimed.	12.00	.....	.....	14.00	.....	
	Michigan Carbon Works, Detroit, Mich.	Found.	12.15	12.15	1.28	13.43	12.15	222
225	**Peerless Dissolved Bone**	Claimed.	12.00	.....	1.00	13.00	.....	
	The Canton Fertilizer & Chemical Co., Canton, O.	Found.	13.52	13.52	1.79	15.31	13.52	225
237	**International Phosphate**	Claimed.	14.00	.....	2.00	16.00	.....	
	The Western Union Chemical Co., Cleveland, O.	Found.	14.75	14.75	2.30	17.05	14.75	237
239	**Bull Dog Phosphate**	Claimed.	10.00	.....	2.00	12.00	.....	
	The Western Union Chemical Co., Cleveland, O.	Found.	10.22	10.22	3.07	13.29	10.22	239
250	**Ft. Dearborn Phosphate**	Claimed	10.00	.....	.....	11.00	.....	
	The Hardy Packing Co., Chicago, Ill.	Found.	11.32	11.32	2.30	13.62	11.32	250

252	**Wheat and Oats Special** The Farmers' Fertilizer Co., Indianapolis, Ind	Claimed. Found.	14.00 14.68	..... 14.68	1.00 1.15	15.00 15.83	..... 14.68	252
263	**High Grade Acid Phosphate** Darling & Company, Chicago, Ill	Claimed. Found.	14.00 14.64	..... 14.64	..... 0.26	..... 14.90	..... 14.64	263
265	**Quinnipiac's Plain Superphosphate** The Am. Ag. Chem. Co., New York, N. Y	Claimed. Found.	10.00 10.39	..... 10.39	..... 2.56	12.00 12.95	..... 10.39	265
266	**Zell's Dissolved S. C. Phosphate** The Am. Ag. Chem. Co., New York, N. Y	Claimed. Found.	12.00 13.63	..... 13.63	..... 0.77	14.00 14.40	..... 13.63	266
267	**Zell's Dissolved Bone** The Am. Ag. Chem. Co., New York, N. Y	Claimed. Found.	14.00 14.64	..... 14.64	..... 0.64	16.00 15.28	..... 14.64	267
271	**Enterprise** L. Frank & Sons, Zanesville, O	Claimed. Found.	16.00 15.80	..... 15.80	1.00 3.07	17.00 18.87	..... 15.80	271
280	**Superphosphate** The Buckeye Fertilizer Co.. Columbus, O	Claimed. Found..	10.00 11.46	..... 11.46	1.00 2.74	..... 14.20	..... 11.46	280
285	**Red Line Phosphate** Michigan Carbon Works, Detroit, Mich	Claimed. Found.	14.00 12.25	..... 12.25	..... 4.60	16.00 16.85	..... 12.25	285
295	**Packers' Union Acidulated Bone** The Am. Ag. Chem. Co., New York, N. Y	Claimed. Found.	14.00 12.42	..... 12.42	..... 0.90	16.00 13.32	..... 12.42	295
296	**Packer's Union Banner Wheat Grower** The Am. Ag. Chem. Co., New York, N. Y	Claimed. Found.	10.00 11.25	..... 11.25	..... 1.46	12.00 12.71	..... 11.25	296
303	**Quinnipiac's Soluble Dissolved Bone** The Am. Ag. Chem. Co., New York, N. Y	Claimed. Found.	14.00 13.75	..... 13.75	..... 3.84	16.00 17.59	..... 13.75	303
315	**Acid Phosphate** The J. L. & H. Stadler Rend. & Fert. Co., Cleveland, O.	Claimed. Found.	16.00 16.56	..... 16.56	1.00 1.59	17.00 18.15	..... 16.56	315
317	**Milsom's Acid Phosphate** The Am. Ag. Chem. Co., New York, N. Y	Claimed. Found.	14.00 15.31	..... 15.31	..... 1.21	16.00 16.52	..... 15.31	317
324	**Soluble Bone Phosphate** S. M. Hess & Bro., Philadelphia, Pa	Claimed. Found.	14.00 14.98	..... 14.98	2.00 1.28	16.00 16.26	..... 14.98	324

TABLE IV.—Rock Phosphate—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
330	**Wheat Grower**	Claimed.	14.00	.....	1.00	.....	.....	
	The Belmont Phosphate Co., Colerain, O.	Found.	14.28	14.28	1.40	15.68	14.28	330
342	**High Grade Dissolved Bone**	Claimed.	14.00	.....	1.00	15.00	.....	
	The Louisville Fertilizer Co., Louisville, Ky.	Found.	14.71	14.71	0.70	15.41	14.71	342
346	**Electric**	Claimed.	10.00	.....	1.00	11.00	.....	
	L. Frank & Sons, Zanesville, O.	Found.	10.94	10.94	0.83	11.77	10.94	346
355	**Great Eastern's Columbus Special**	Claimed.	10.00	.....	.....	12.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	10.62	10.62	3.64	14.26	10.62	355
362	**Dissolved Bone**	Claimed.	16.00	.....	1.00	17.00	.....	
	The M. Hamm Co., Washington C. H., O.	Found.	17.66	17.66	1.15	18.81	17.66	362
364	**Ten Per Cent. Acid Phosphate**	Claimed.	10.00	.....	1.00	11.00	.....	
	The Rasin-Monumental Co., Baltimore, Md.	Found.	10.80	10.80	1.67	12.47	10.80	364
365	**Acid Phosphate**	Claimed.	14.00	.....	1.00	15.00	.....	
	The Rasin-Monumental Co., Baltimore, Md.	Found.	14.96	14.96	0.83	15.79	14.96	365
368	**S. C. Phosphate**	Claimed.	14.00	.....	2.00	16.00	.....	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	14.97	14.97	0.70	15.67	14.97	368
371	**Soluble Dissolved Bone**	Claimed.	16.00	.....	2.00	18.00	.....	
	Dahl & Miller, Washington C. H., O.	Found.	16.25	16.25	1.59	17.84	16.25	371

372	**Zell's T. & P. Superphosphate**	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	14.78	14.78	1.85	16.63	14.78	372
379	**Diamond S. Phosphate**	Claimed.	10.00	.....	1.00	11.00	.....	
	Swift & Company, Chicago, Ill.	Found.	11.08	11.08	0.77	11.85	11.08	379
385	**Alliance Phosphate**	Claimed.	10.00	.....	2.00	12.00	.....	
	The Royal Fertilizer Co., Cleveland, O.	Found.	11.12	11.12	0.83	11.95	11.12	385
392	**Help Mate**	Claimed.	12.00	.....	1.00	13.00	.....	
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	11.38	11.38	2.56	13.94	11.38	392
399	**Acid Phosphate**	Claimed.	10.00	.....	1.00	11.00	.....	
	The Bucyrus Fertilizer Co., Bucyrus, O.	Found.	9.84	9.84	2.17	12.01	9.84	399
402	**Standard Phosphate**	Claimed.	14.00	.....	1.00	15.00	.....	
	The E. P. Critchfield Co., Sta. P., Cincinnati, O.	Found.	15,61	15.61	1.15	16.76	15.61	402
410	**Soluble Phosphate**	Claimed.	10.00	.....	.....	12.00	.....	
	The Packers' Fertilizer Association, Chicago, Ill.	Found.	11.83	11.83	1.15	12.98	11.83	410
411	**Soluble Dissolved Bone**	Claimed.	14.00	.....	.....	16.00	.....	
	The Packers' Fertilizer Association, Chicago, Ill.	Found.	15.10	15.10	1.40	16.50	15.10	411
425	**Farmers' Friend Phosphate**	Claimed.	13.00	.....	1.00	14.00	.....	
	The Alliance Fertilizer Co., Alliance, O.	Found.	12.40	12.40	5.38	17.78	12.40	425
430	**Dissolved Bone**	Claimed.	14.00	.....	.....	15.00	.....	
	The Western Chemical Co., Chicago, Ill.	Found.	15.23	15.23	2.68	17.91	15.23	430
431	**Soluble Phosphate**	Claimed.	10.00	.....	.....	11.00	.....	
	The Western Chemical Co., Chicago, Ill.	Found.	11.77	11.77	2.30	14.07	11.77	431
443	**Acid Phosphate**	Claimed.	12.00	.....	2.00	14.00	.....	
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	13.12	13.12	1.46	14.58	13.12	443
444	**Farmers' Union Erie Queen**	Claimed.	12.00	.....	.....	14.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	12.79	12.79	0.83	13.62	12.79	444
446	**Old Honesty Phosphate**	Claimed.	14.00	.....	2.00	16.00	.....	
	The Royal Fertilizer Co., Cleveland, O.	Found.	14.85	14.85	1.46	16.31	14.85	446

TABLE IV.—Rock Phosphate—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
453	Fourteen Per Cent. Acid Phosphate	Claimed.	14.00	.....	.....	.....	.....	
	The Virginia-Carolina Chemical Co., Baltimore, Md	Found.	14.71	14.71	1.98	16.69	14.71	453
459	Acid Phosphate	Claimed.	12.00	.....	1.00	13.00	.....	
	The Muskingum Valley Fertilizer Co., Marietta, O	Found.	10.17	10.17	3.13	13.30	10.17	459
463	Dissolved Bone Black Wheat Special	Claimed.	15.00	.....	1.00	16.00	.....	
	The Jarecki Chemical Co., Sandusky and Cincinnati, O.	Found.	14.39	14.39	1.92	16.31	14.39	463
464	Dissolved Bone Fertilizer	Claimed.	12.00	.....	1.00	13.00	.....	
	The Scientific Fertilizer Co., Pittsburg, Pa.	Found.	8.83	8.83	1.66	10.49	8.83	464
470	Acid Phosphate	Claimed.	14.00	.....	1.00	15.00	.....	
	The Lackawanna Animal Product Co., Moosic, Pa	Found.	15.67	15.67	1.02	16.69	15.67	470
475	Full Value Phosphate	Claimed.	12.00	.....	1.00	13.00	.....	
	The Allegheny City Fertilizer Works, Allegheny, Pa	Found.	10.89	10.89	3.18	14.07	10.89	475
486	Detrick's Soluble Bone	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y	Found.	14.73	14.73	0.88	15.61	14.73	486
487	Niagara's Queen City Phosphate	Claimed.	12.00	.....	.....	14.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y	Found.	11.84	11.84	2.42	14.26	11.84	487
489	Soluble Bone	Claimed.	14.00	.....	1.00	15.00	.....	
	The M. Hamm Co., Washington C. H., O	Found.	14.25	14.25	1.80	16.05	14.25	489

490	Economy	Claimed.	10.00	.....	1.00	11.00	.....	
	The M. Hamm Co., Washington C. H., O.	Found.	11.04	11.04	1.14	12.18	11.04	490
491	Acid Phosphate	Claimed.	14.00	.....	1.00	15.00	.....	
	Walker, Stratman & Co., Pittsburg, Pa.	Found.	12.60	12.60	2.04	14.64	12.60	491
495	High Grade Dissolved Bone	Claimed.	14.00	.....	1.00	15.00	.....	
	The Jones Fertilizing Co., Cincinnati, O.	Found.	12.47	12.47	1.28	13.75	12.47	495
500	Clark's Cove Atlas Bone Phosphate	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	14.72	14.72	3.06	17.78	14.72	500
506	Grain and Grass Grower	Claimed.	16.00	.....	1.00	.....	.....	
	The Akron Fertilizer Co., Akron, O.	Found.	15.79	15.79	1.80	17.59	15.79	506
510	Soluble Bone	Claimed.	14.00	.....	1.00	15.00	.....	
	The Buffalo Fertilizer Co., Buffalo, N. Y.	Found.	13.71	13.71	2.92	16.63	13.71	510
513	Dissolved Bone	Claimed.	14.00	.....	1.00	15.00	.....	
	The Bucyrus Fertilizer Co., Bucyrus, O.	Found.	12.17	12.17	2.80	14.97	12.17	513
529	Acid Phosphate	Claimed.	12.00	.....	....	13.00	.....	
	The Marietta Bone & Phosphate Co., Marietta, O.	Found.	11.44	11.44	2.05	13.49	11.44	529
532	Dissolved Bone Phosphate	Claimed.	14.00	.....	2.00	16.00	.....	
	The G. Ober & Sons Co., Baltimore, Md.	Found.	15.13	15.13	0.64	15.77	15.13	532
533	Eureka Phosphate	Claimed.	10.00	.....	1.00	11.00	.....	
	The Farmers' Fertilizer Co., Indianapolis, Ind.	Found.	10.11	10.11	1.53	11.64	10.11	533
537	Tip Top Superphosphate	Claimed.	15.00	.....	1.00	16.00	.....	
	George W. Mace, Greenville, O.	Found.	15.09	15.09	0.77	15.86	15.09	537
541	Reese's Elm Phosphate	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	14.64	14.64	0.90	15.54	14.64	541
547	High Grade Dissolved Bone	Claimed.	14.00	.....	1.00	15.00	.....	
	The Tennessee Chemical Co., Nashville, Tenn.	Found.	13.30	13.30	1.79	15.09	13.30	547
554	Dissolved Phosphate	Claimed.	10.00	.....	1.00	11.00	.....	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	10.29	10.29	0.64	10.93	10.29	554

TABLE IV.—ROCK PHOSPHATE—Concluded.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Total Value	Record Number
			Available		Insoluble	Total Percent		
			Percent	Value	Percent			
557	**Cumberland's Acid Phosphate**	Claimed.	10.00	.....	.....	12.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	11.44	11.44	1.02	12.46	11.44	557
558	**Acid Phosphate**	Claimed.	14.00	.....	2.00	16.00	.....	
	The Fox Chemical Co., Louisville, Ky.	Found.	15.15	15.15	0.77	15.92	15.15	558
561	**Niagara's Dissolved Bone**	Claimed.	14.00	.....	.....	16.00	.....	
	The Am. Ag. Chem. Co., New York, N. Y.	Found.	15.73	15.73	0.77	16.50	15.73	561
562	**Acid Phosphate**	Claimed.	14.00	.....	.....	.....	.....	
	The Kaufman Fertilizer Co., Indianapolis, Ind.	Found.	9.41	9.41	1.72	11.13	9.41	562
564	**High Grade Phosphate**	Claimed.	16.00	.....	1.00	17.00	.....	
	The Seneca Fertilizer Co., Tiffin, O.	Found.	16.43	16.43	2.17	18.60	16.43	564
565	**Acid Phosphate**	Claimed.	8.00	.....	1.00	9.00	.....	
	The Seneca Fertilizer Co., Tiffin, O.	Found.	8.76	8.76	2.62	11.38	8.76	565
567	**Acid Phosphate**	Claimed.	14.00	.....	2.00	16.00	.....	
	The Central Ohio Fert. Co., Mt. Vernon, O.	Found.	13.37	13.37	2.94	16.31	13.37	567
568	**Royal Phosphate**	Claimed.	10.00	.....	1.50	.....	.....	
	The Virginia-Carolina Chem. Co., Baltimore, Md.	Found.	10.63	10.63	4.02	14.65	10.63	568

TABLE V.—ROCK PHOSPHATE AND POTASH.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Potash		Total Value	Record Number
			Available		Insoluble	Total Percent				
			Percent	Value	Percent		Percent	Value		
12	**Bone and Potash**..................................	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Northwestern Fert. Co.. Chicago, Ill.....	Found.	9.71	9.71	2.43	12.14	2.18	2.18	11.89	12
15	**Phosphate and Potash**.........................	Claimed.	11.00	.....	.....	12.00	1.00	.....	.....	
	The Hardy Packing Co., Chicago, Ill.........	Found.	11.33	11.33	1.72	13.05	1.37	1.37	12.70	15
25	**Dissolved Bone and Potash**....................	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Schaal-Sheldon Fertilizer Co., Erie, Pa...	Found.	10.54	10.54	2.17	12.71	1.95	1.95	12.49	25
31	**Special Phosphate and Potash**.................	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	Swift & Company, Chicago, Ill...............	Found.	11.75	11.75	0.83	12.58	2.72	2.72	14.47	31
44	**Pacific's Dissolved Bone and Potash**...........	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.09	10.09	2.43	12.52	2.26	2.26	12.35	44
49	**Read's Bone and Potash**.......................	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.50	10.50	2.15	12.65	2.22	2.22	12.72	49
54	**Bone and Potash**	Claimed.	10.00	.....	2.00	12.00	2.00	.....	.....	
	The Tuscarora Fertilizer Co., Chicago, Ill...	Found.	13.11	13.11	0.25	13.36	0.81	0.81	13.92	54
58	**Dissolved Bone with Potash**...................	Claimed.	12.00	.....	1.00	13.00	2.00	.....	.....	
	The M. Hamm Co., Washington C. H., O....	Found.	12.21	12.21	1.66	13.87	*1.52	1.75	13.96	58

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* From sulphate.

TABLE V.—ROCK PHOSPHATE AND POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Potash		Total Value	Record Number
			Available		Insoluble	Total Percent				
			Percent	Value	Percent		Percent	Value		
61	**Soluble Bone and Potash**.....................	Claimed.	11.00	.....	.....	12.00	1.00	.....	.....	
	The Ohio Farmers' Fert. Co., Columbus, O...	Found.	10.86	10.86	1.72	12.58	1.23	1.23	12.09	61
68	**Calumet Phosphate**	Claimed.	11.00	.....	.....	12.00	1.00	.....	.....	
	The Chicago Fertilizer Co., Chicago, Ill.......	Found.	11.32	11.32	1.79	13.11	1.20	1.20	12.52	68
73	**Star Phosphate**	Claimed.	11.00	.....	.....	12.00	1.00	.....	.....	
	The Abbott & Martin Rend. Co., Columbus, O.	Found.	11.45	11.45	1.66	13.11	1.06	1.06	12.51	73
87	**Standard's Bone and Potash**..................	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.35	10.35	2.30	12.65	1.95	1.95	12.30	87
91	**Phosphoric Acid and Potash**..................	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	Walker, Stratman & Co., Pittsburg, Pa......	Found.	8.82	8.82	1.98	10.80	1.76	1.76	10.58	91
93	**Tip Top Bone and Potash**.....................	Claimed.	12.00	.....	1.00	13.00	2.00	.....	.....	
	L. Frank & Sons, Zanesville, O.............	Found.	12.03	12.03	1.40	13.43	*1.60	1.84	13.87	93
95	**Competitor Phosphate**	Claimed.	10.00	.....	1.00	.....	1.00	.....	.....	
	Jas. McCallum & Co., Dayton, O............	Found.	8.41	8.41	1.59	10.00	0.29	.29	8.70	95
102	**Dissolved Bone and Potash**..................	Claimed.	10.00	.....	2.00	12.00	2.00	.....	.....	
	The Bowker Fertilizer Co., Cincinnati, O.....	Found.	10.16	10.16	2.17	12.33	2.20	2.20	12.36	102
103	**Potash Fertilizer**	Claimed.	10.00	.....	2.00	12.00	5.00	.....	.....	
	The Bowker Fertilizer Co., Cincinnati, O.....	Found.	10.88	10.88	2.17	13.05	5.18	5.18	16.06	103

107	**Bradley's Alkaline Bone and Potash**...........	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.36	10.36	2.94	13.30	2.43	2.43	12.79	107
109	**Milsom's Dissolved Bone and Potash**............	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.15	10.15	2.30	12.45	1.99	1.99	12.14	109
111	**Reese's Crown Phosphate and Potash**..........	Claimed.	11.00	.....	.....	13.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	12.03	12.03	1.15	13.18	2.10	2.10	14.13	111
113	**Cleveland Dryer's XXX Phosphate and Potash.**	Claimed.	12.00	.....	.....	14.00	4.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	12.34	12.34	1.46	13.80	3.30	3.30	15.64	113
127	**Square Brand Phosphate and Potash**...........	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Jarecki Chem. Co., Sandusky & Cin'ti, O.	Found.	11.64	11.64	2.11	13.75	*1.97	2.27	13.91	127
137	**Acidulated Bone and Potash**...................	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Packers' Fert. Co., Sta. P., Cincinnati, O.	Found.	11.09	11.09	2.01	13.10	*2.12	2.44	13.53	137
146	**Farmers' Union Dissolved Bone and Potash**....	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.48	10.48	2.17	12.65	2.37	2.37	12.85	146
154	**Phosphate and Potash**	Claimed.	10.00	.....	2.00	12.00	2.00	.....	.....	
	The Armour Fertilizer Works, Chicago, Ill...	Found.	10.05	10.05	0.44	10.49	2.60	2.60	12.65	154
156	**Dissolved Bone with Potash**...................	Claimed.	12.00	.....	1.00	13.00	3.00	.....	.....	
	The Jarecki Chem. Co., Sandusky & Cin'ti, O.	Found.	13.69	13.69	2.23	15.92	*3.39	3.90	17.59	156
159	**Crocker's Dissolved Bone and Potash**..........	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.67	10.67	1.34	12.01	2.08	2.08	12.75	159
165	**Williams & Clark's Dissolved Bone and Potash**	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.35	10.35	2.05	12.40	2.22	2.22	12.57	165
173	**Phosphate and Potash**	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The E. Rauh & Sons Fert. Co., Indianapolis, Ind.	Found.	12.29	12.29	1.40	13.69	0.77	.77	13.06	173
176	**Rickard's Dissolved Bone & Potash**............	Claimed.	12.00	.....	2.00	14.00	4.00	.....	.....	
	G. W. Rickard, Medina, O..................	Found.	12.58	12.58	0.44	13.02	*3.47	3.99	16.57	176

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* From sulphate.

TABLE V.—ROCK PHOSPHATE AND POTASH—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Potash		Total Value	Record Number
			Available		Insoluble	Total Percent				
			Percent	Value	Percent		Percent	Value		
186	**Red Line Phosphate with Potash**..............	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	Michigan Carbon Works, Detroit, Mich......	Found.	10.08	10.08	2.36	12.44	1.99	1.99	12.01	136
192	**Clark's Cove Triumph Bone and Potash**........	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y......	Found.	9.60	9.60	3.00	12.60	2.35	2.35	11.95	192
198	**Great Eastern's Soluble Bone and Potash**.......	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	9.84	9.84	2.56	12.40	2.10	2.10	11.94	198
205	**Potash Mixture**	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Continental Fert. Co., Nashville, Tenn..	Found.	9.45	9.45	0.70	10.15	*1.87	2.15	11.60	205
209	**Capital Dissolved Bone and Potash**...........	Claimed.	12.00	.....	1.00	13.00	3.00	.....	.....	
	The Cin'ti Phosphate Co., Sta. P., Cin'ti, O...	Found.	13.65	13.65	2.30	15.95	*2.45	2.82	16.47	209
211	**Capital Alkaline Bone**	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Cin'ti Phosphate Co., Sta. P., Cin'ti, O...	Found.	11.00	11.00	3.33	14.33	*1.89	2.17	13.17	211
228	**Peerless Dissolved Bone with Potash**..........	Claimed.	12.00	.....	1.00	13.00	1.50	.....	.....	
	The Canton Fert. & Chem. Co., Canton, O....	Found.	12.02	12.02	1.85	13.87	1.85	1.85	13.87	228
242	**Potash Mixture**	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Jones Fertilizing Co., Cincinnati, O......	Found.	10.36	10.36	0.77	11.13	1.76	1.76	12.12	242
248	**High Grade Corn and Wheat Grower with Pot.**	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Queen City Fertilizer Co., Cincinnati, O..	Found.	10.34	10.34	1.92	12.26	*2.18	2.51	12.85	248

261	**Grain and Grass Grower**	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	11.44	11.44	0.70	12.14	2.12	2.12	13.56	261
262	**Special Alkaline Bone**	Claimed.	10.00	.....	2.00	12.00	4.00	.....	.....	
	The I. P. Thomas & Son Co., Philadelphia, Pa.	Found.	10.79	10.79	1.21	12.00	3.87	3.87	14.66	262
274	**Cleveland Dryer's Horsehead Phos. & Potash**..	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.49	10.49	2.11	12.60	1.85	1.85	12.34	274
291	**Potash Mixture**	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Louisville Fertilizer Co., Louisville, Ky..	Found.	10.68	10.68	0.64	11.32	*2.47	2.84	13.52	291
294	**Packers' Union Wheat, Oats and Clover**.......	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	9.47	9.47	1.59	11.06	1.85	1.85	11.32	294
302	**Quinnipiac's Dissolved Bone and Potash**.......	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	9.78	9.78	3.07	12.85	2.08	2.08	11.86	302
306	**Natural Plant Food**.........................	Claimed.	8.00	.....	1.00	9.00	2.00	.....	.....	
	The Bucyrus Fertilizer Co., Bucyrus, O......	Found.	8.37	8.37	2.05	10.42	2.08	2.08	10.45	306
316	**Cumberland's Bone and Potash**................	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.76	10.76	2.36	13.12	2.06	2.06	12.82	316
320	**Big Four Phosphate**	Claimed.	8.00	.....	.....	.....	1.00	.....	.....	
	The Globe Fertilizer Co., Louisville, Ky......	Found.	8.42	8.42	1.15	9.57	1.60	1.60	10.02	320
334	**Zell's Electric Phosphate**.....................	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.16	10.16	2.49	12.65	2.33	2.33	12.49	334
335	**Potash Special**	Claimed.	10.00	.....	2.00	12.00	2.00	.....	.....	
	The Globe Fertilizer Co., Louisville, Ky......	Found.	9.21	9.21	0.38	9.59	1.95	1.95	11.16	335
353	**Phosphate of Potash**	Claimed.	9.00	.....	.....	.....	4.00	.....	.....	
	The Globe Fertilizer Co., Louisville, Ky......	Found.	8.83	8.83	0.44	9.27	2.64	2.64	11.47	353
363	**Bone and Potash Fertilizer**	Claimed.	10.00	.....	1.50	11.50	2.00	.....	.....	
	The Rasin-Monumental Co., Baltimore, Md...	Found.	10.74	10.74	1.66	12.40	1.50	1.50	12.24	363

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* From sulphate.

TABLE V.—ROCK PHOSPHATE AND POTASH—Concluded.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Phosphoric Acid				Potash		Total Value	Record Number
			Available		Insoluble	Total Percent				
			Percent	Value	Percent		Percent	Value		
377	**Bone and Potash**............................	Claimed.	10.00	.....	1.00	.....	8.00	.....	.....	
	The Rochester Fert. Works, Rochester, N. Y.	Found.	9.65	9.65	1.15	10.80	9.06	.06	18.71	377
388	**Soluble Bone and Potash**......................	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Newport Fert. Co., Philadelphia, Pa....	Found.	6.07	6.07	3.39	9.46	2.43	2.43	8.50	388
390	**Potash and Bone Phosphate**..................	Claimed.	10.00	.....	1.00	11.00	6.00	.....	.....	
	Walker, Stratman & Co., Pittsburg, Pa......	Found.	10.60	10.60	2.11	12.71	4.43	4.43	15.03	390
405	**Wheat Maker**	Claimed.	10.00	.....	.....	.....	2.00	.....	.....	
	The Buckeye Fertilizer Co., Columbus, O....	Found.	12.47	12.47	2.43	14.90	1.14	1.14	13.61	405
408	**Acidulated Bone**	Claimed.	11.00	.....	.....	12.00	1.00	.....	.....	
	The Western Chemical Co., Chicago, Ill......	Found.	11.51	11.51	2.05	13.56	1.23	1.23	12.74	408
420	**M. E. Wheeler's Wheat and Clover Fertilizer**...	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.62	10.62	2.17	12.79	2.06	2.06	12.68	420
429	**Dissolved Bone and Potash**..................	Claimed.	12.00	.....	2.00	14.00	4.00	.....	.....	
	The Western Union Chem. Co., Cleveland, O.	Found.	12.09	12.09	1.53	13.62	3.80	3.80	15.89	429
433	**Grain and Grass Grower**......................	Claimed.	10.00	.....	2.00	12.00	2.00	.....	.....	
	The Western Union Chem. Co., Cleveland, O.	Found.	10.42	10.42	1.53	11.95	1.89	1.89	12.31	433
439	**Phosphate and Potash**........................	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Farmers' Fert. Co., Indianapolis, Ind....	Found.	10.17	10.17	1.40	11.57	*2.89	2.75	12.92	439

467	**Lawrence's Wheat Special**....................	Claimed.	10.00	.....	2.00	12.00	1.00	.....	.....	
	The Royal Fertilizer Co., Cleveland, O.......	Found.	9.78	9.78	2.23	12.01	2.14	2.14	11.92	467
471	**Soluble Bone and Potash**......................	Claimed.	10.00	.....	2.00	12.00	2.00	.....	.....	
	S. M. Hess & Bro., Philadelphia, Pa.........	Found.	9.78	9.78	2.11	11.89	2.10	2.10	11.88	471
477	**Dissolved Bone and Potash**....................	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Allegheny City Fert. Wks., Allegheny, Pa.	Found.	8.70	8.70	2.74	11.44	2.14	2.14	10.84	477
514	**Niagara's Dissolved Bone and Potash**..........	Claimed.	10.00	.....	.....	12.00	2.00	.....	.....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	10.27	10.27	1.80	12.07	1.95	1.95	12.22	514
522	**Potash Mixture**	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Tennessee Chem. Co., Nashville, Tenn..	Found.	9.60	9.60	11.95	21.55	1.14	1.14	10.74	522
536	**Dissolved Bone, Phosphate and Potash**........	Claimed.	14.00	.....	2.00	16.00	1.50	.....	.....	
	Geo. W. Mace, Greenville, O..................	Found.	14.90	14.90	0.64	15.54	0.64	.64	15.54	536
538	**Bone and Potash**	Claimed.	10.00	.....	1.00	11.00	2.00	.....	.....	
	The Buffalo Fertilizer Co., Buffalo, N. Y.....	Found.	11.12	11.12	3.52	14.64	1.85	1.85	12.97	538
542	**Potashed Bone**	Claimed.	10.00	.....	2.00	12.00	5.00	.....	.....	
	The Rasin-Monumental Co., Baltimore, Md...	Found.	10.23	10.23	3.07	13.30	4.30	4.30	14.53	542
559	**Standard Bone and Potash**....................	Claimed.	10.00	.....	.....	.....	2.00	.....	.....	
	The Virginia-Carolina Chem. Co., Balt., Md..	Found.	11.05	11.05	1.66	12.71	1.91	1.91	12.96	559

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* From sulphate.

TABLE VI.—TANKAGE.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid		Total Value	Record Number
			Percent	Value	Percent	Value		
373	**Bone and Blood**	Claimed.	7.00	.....	10.00	.....	.....	
	The Armour Fertilizer Works, Chicago, Ill	Found.	7.25	13.05	11.06	6.64	19.69	373
496	**Ammoniated Bone Meal**	Claimed.	5.00	.....	15.00	.....	.....	
	The Jones Fertilizing Co., Cincinnati, O	Found.	5.80	9.54	16.56	9.94	19.48	496
497	**Ammoniated Bone**	Claimed.	6.00	.....	17.00	.....	.....	
	Swift & Company, Chicago, Ill	Found.	5.60	10.08	20.21	12.13	22.21	497
520	**Bone Meal and Blood**	Claimed.	4.50	.....	23.00	.....	.....	
	Swift & Company, Chicago, Ill	Found.	5.05	9.09	22.77	13.66	22.75	520
534	**Bone and Blood Fertilizer**	Claimed.	4.40	.....	17.78	.....	.....	
	Geo. Rupp & Co., Hamilton, O	Found.	5.15	9.27	17.71	10.63	19.90	534

TABLE VII.—TANKAGE AND POTASH.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid		Potash.		Total Value	Record Number
			Percent	Value	Percent	Value	Percent	Value		
77	Big Three, Bone Phosphate with Potash.......	Claimed.	3.00	.....	10.00	.....	2.00	.....	.....	
	Nelson Morris & Co., Chicago, Ill............	Found.	3.25	5.85	10.29	6.17	*2.68	3.08	15.10	77
79	Big Five, Bone Phosphate with Potash.........	Claimed.	3.00	.....	10.00	.....	1.00	.....	.....	
	Nelson Morris & Co., Chicago, Ill............	Found.	3.75	6.75	10.29	6.17	1.23	1.23	14.15	79
515	Ammoniated Bone and Potash.................	Claimed.	5.75	.....	16.00	.....	3.00	.....	.....	
	Swift & Company, Chicago, Ill...............	Found.	5.90	10.62	17.01	10.21	3.97	3.97	24.80	515

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* From sulphate.

TABLE VIII.—BONES.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Potash (When included)		Total Value	Record Number
					In Fine Bone		In Med. Bone						
			Percent	Value	Percent	Value	Percent	Value	Total Percent	Percent	Value		
23	**Schaal's Pure Bone Meal**......................	Claimed.	4.00	....	....	....	....	....	22.00	....	....	....	
	The Schaal-Sheldon Fertilizer Co., Erie, Pa...	Found.	4.65	11.62	10.98	8.24	10.13	6.08	21.11	....	....	25.94	23
27	**Bone Meal**	Claimed.	3.00	....	....	....	....	....	25.00	....	....	....	
	Swift & Company, Chicago, Ill...............	Found.	2.85	7.12	21.50	16.13	6.39	3.84	27.89	....	....	27.09	27
28	**Pure Raw Bone Meal**	Claimed.	4.50	....	....	....	....	....	23.00	....	....	....	
	Swift & Company, Chicago, Ill...............	Found.	5.65	14.12	15.34	11.51	8.07	4.84	23.41	....	....	30.47	28
32	**Bone Meal**	Claimed.	3.00	....	....	....	....	....	24.00	....	....	....	
	The Armour Fertilizer Works, Chicago, Ill...	Found.	3.85	9.62	14.97	11.23	8.96	5.38	23.93	....	....	26.23	32
64	**Raw Bone Meal**	Claimed.	1.50	....	....	....	....	....	27.00	....	....	....	
	The Ohio Farmers' Fertilizer Co., Columbus, O	Found.	1.60	4.00	15.03	11.27	13.88	8.33	28.91	....	....	23.65	64
75	**Big One, Pure Raw Bone**......................	Claimed.	4.00	....	....	....	....	....	24.00	....	....	....	
	Nelson Morris & Co., Chicago, Ill...........	Found.	5.05	12.62	10.56	7.92	13.43	8.06	23.99	....	....	28.60	75
76	**Big Two, Pure Bone Meal**.....................	Claimed.	2.50	....	....	....	....	....	28.00	....	....	....	
	Nelson Morris & Co., Chicago, Ill...........	Found.	2.45	6.13	20.71	15.53	9.16	5.50	29.87	....	....	27.16	76
80	**Big Six, Special Bone Meal**....................	Claimed.	1.00	....	....	....	....	....	27.00	....	....	....	
	Nelson Morris & Co., Chicago, Ill...........	Found.	1.25	3.12	24.37	18.28	4.23	2.54	28.60	....	....	23.94	80
83	**A Ground Bone**................................	Claimed.	1.50	....	....	....	....	....	25.00	....	....	....	
	The Am. Ag. Chem. Co., New York, N. Y....	Found.	1.42	3.55	14.27	10.70	12.60	7.56	26.87	....	....	21.81	83

100	**Bone Meal**	**Claimed.**	2.00	....	....	....	....	....	20.00	....	....	....	100
	The Bowker Fertilizer Co., Cincinnati, O.	**Found.**	1.86	4.65	15.08	11.31	5.18	3.11	20.26	....	....	19.07	
131	**Packers' Raw Bone**	Claimed.	1.50	....	....	....	....	....	27.00	....	....	....	131
	The Hardy Packing Co., Chicago, Ill.	Found.	1.50	3.75	15.44	11.58	12.13	7.28	27.57	....	....	22.61	
140	**Special Bone Meal**	**Claimed.**	1.00	....	....	....	....	....	27.50	....	....	....	140
	Swift & Company, Chicago, Ill.	**Found.**	1.60	4.00	20.75	15.56	10.40	6.24	31.15	....	....	25.80	
153	**Armour's Steamed Bone**	Claimed.	2.00	....	....	....	....	....	20.00	....	....	....	153
	The Armour Fertilizer Works, Chicago, Ill.	Found.	3.04	7.60	17.19	12.89	4.18	2.51	21.37	....	....	23.00	
210	**Capital Ground Bone**	Claimed.	3.00	....	....	....	....	....	20.00	....	....	....	210
	The Cin'ti Phosphate Co., Sta. P., Cin'ti, O.	**Found.**	2.95	7.37	14.95	11.21	7.88	4.73	22.83	....	....	23.31	
212	**Dessicated Bone**	Claimed.	1.50	....	....	....	....	....	25.00	....	....	....	212
	Michigan Carbon Works, Detroit, Mich.	Found.	1.85	4.62	17.04	12.78	9.38	5.63	26.42	....	....	23.03	
226	**Peerless Raw Bone**	Claimed.	4.00	....	....	....	....	....	22.00	....	....	....	226
	The Canton Fert. & Chem. Co., Canton, O.	Found.	5.10	12.75	2.77	2.08	20.00	12.00	22.77	....	....	26.83	
249	**Bone Meal**	**Claimed.**	3.00	....	....	....	....	....	20.00	....	....	....	249
	The Queen City Fert., Co., **Cincinnati, O.**	Found.	3.02	7.55	13.59	10.19	9.44	5.66	23.03	....	....	23.40	
258	**Pure Lawn Fertilizer**	**Claimed.**	4.50	....	....	....	....	....	23.00	....	....	....	258
	Swift & Company, Chicago, Ill.	Found.	4.85	12.12	17.37	13.03	6.10	3.66	23.47	....	....	28.81	
293	**Bone Meal**	**Claimed.**	1.00	....	....	....	....	....	20.00	....	....	....	293
	The Louisville Fertilizer Co., Louisville, Ky.	**Found.**	1.20	3.00	18.81	14.11	3.32	1.99	22.13	....	....	19.10	
307	**Raw Bone**	**Claimed.**	4.50	....	....	....	....	....	22.00	....	....	....	307
	The Armour Fertilizer Works, Chicago, Ill.	Found.	4.85	12.12	18.82	14.12	4.85	2.91	23.67	....	....	29.15	
308	**Ground Raw Bone**	**Claimed.**	4.00	....	....	....	....	....	21.00	....	....	....	308
	Darling & Company, Chicago, Ill.	Found.	4.85	12.12	10.74	8.06	12.36	7.42	23.10	....	....	27.60	
311	**Pure Raw Bone Meal**	**Claimed.**	4.50	....	....	....	....	....	23.00	....	....	....	311
	The J. L. & H. Stadler R. & F. Co., Cleveland, O.	Found.	4.70	11.75	15.54	11.66	6.98	4.19	22.52	....	....	27.60	
329	**Bone and Potash**	**Claimed.**	3.00	....	....	....	....	....	23.50	3.00	....	....	329
	Swift & Company, Chicago, Ill.	**Found.**	2.70	6.75	19.36	14.52	6.80	4.08	26.16	1.85	1.85	27.20	

TABLE VIII.—BONES—Continued.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Potash (When included)		Total Value	Record Number
					In Fine Bone		In Med. Bone						
			Percent	Value	Percent	Value	Percent	Value	Total Percent	Percent	Value		
339	**Animal Bone**	Claimed.	3.00	....	....	....	....	....	24.00	....	....	....	
	The Tuscarora Fertilizer Co., Chicago, Ill	Found.	3.65	9.12	16.66	12.50	5.47	3.28	22.13	....	....	24.90	339
376	**Pure Ground Bone**	Claimed.	4.50	....	....	....	....	....	24.00	....	....	....	
	The Rochester Fert. Wks., Rochester, N. Y.	Found.	5.25	13.12	17.28	12.96	4.60	2.76	21.88	....	....	28.84	376
378	**Pure Raw Bone Meal**	Claimed.	4.00	....	....	....	....	....	22.00	....	....	....	
	Walker, Stratman & Co., Pittsburg. Pa	Found.	4.10	10.25	16.25	12.19	6.01	3.61	22.26	....	....	26.05	378
383	**Superior Pure Ground Bone**	Claimed.	4.00	....	....	....	....	....	23.00	....	....	....	
	Jas. McCallum & Co., Dayton, O	Found.	5.30	13.25	10.81	8.11	10.81	6.49	21.62	....	....	27.85	383
389	**Two and Twenty Bone**	Claimed.	2.00	....	....	....	....	....	18.00	....	....	....	
	Darling & Company, Chicago, Ill	Found.	2.55	6.37	15.91	11.93	4.49	2.69	20.40	....	....	20.99	389
394	**Bone Meal**	Claimed.	4.00	....	....	....	....	....	23.00	....	....	....	
	The Newport Fert. Co., Philadelphia, Pa	Found.	5.25	13.12	15.47	11.60	4.36	2.62	19.83	....	....	27.34	394
412	**Pure Ground Bone**	Claimed.	3.00	....	....	....	....	....	23.00	....	....	....	
	Darling & Company, Chicago, Ill	Found.	3.35	8.37	15.76	11.82	8.87	5.32	24.63	....	....	25.51	412
417	**Pure Bone Meal**	Claimed.	3.00	....	....	....	....	....	22.00	....	....	....	
	The Farmers' Fert. Co., Indianapolis, Ind.	Found.	2.90	7.25	13.97	10.48	10.18	6.11	24.15	....	....	23.84	417
428	**Tiger Bone**	Claimed.	1.50	....	25.00	....	....	....	30.00	....	....	....	
	The Western Union Chem. Co., Cleveland, O.	Found.	1.60	4.00	17.40	13.05	7.81	4.69	25.21	....	....	21.74	428

438	**Tuscarora Steamed Bone**......................	Claimed.	2.00	....	....	....	....	....	20.00	....	....	....	
	The Tuscarora Fertilizer Co., Chicago, Ill....	Found.	2.70	6.75	14.04	10.53	6.63	3.98	20.67	....	....	21.26	438
440	**Pure Raw Bone Meal**.........................	Claimed.	5.00	....	....	....	....	....	22.00	....	....	....	
	The Pittsburg Prov. & Pack. Co., Pittsb'g, Pa.	Found.	6.55	16.37	13.81	10.36	4.36	2.62	18.17	....	....	29.35	440
455	**Ground Bone**	Claimed.	1.50	....	....	....	....	....	25.00	....	....	....	
	The Western Chemical Co., Chicago, Ill......	Found.	1.95	4.87	17.48	13.11	11.18	6.71	28.66	....	....	24.69	455
456	**Ground Bone**	Claimed.	3.00	....	....	....	....	....	20.00	....	....	....	
	The Jarecki Chem. Co., Sandusky & Cin'ti, O.	Found.	3.80	9.50	10.53	7.90	8.28	4.97	18.81	....	....	22.37	456
461	**Pure Bone Meal**...............................	Claimed.	4.00	....	....	....	....	....	18.00	....	....	....	
	The Muskingum Val. Fert. Co., Marietta, O..	Found.	4.30	10.75	15.48	11.61	7.43	4.49	22.96	....	....	26.85	461
462	**Pure Bone Flour**..............................	Claimed.	3.00	....	....	....	....	....	21.00	....	....	....	
	George S. Bartlett, Newport, Ky.............	Found.	2.85	7.12	21.11	15.83	5.95	3.57	27.06	....	....	26.52	462
465	**Chicago Raw Bone**............................	Claimed.	1.50	....	....	....	....	....	27.00	....	....	....	
	The Chicago Fertilizer Co., Chicago, Ill......	Found.	1.15	2.87	16.46	12.35	12.20	7.32	28.66	....	....	22.54	465
469	**Warranted Pure Ground Bone**................	Claimed.	4.50	....	....	....	....	....	23.00	....	....	....	
	The Lackawanna Animal Prod. Co., Moosic, Pa.	Found.	4.95	12.37	19.18	14.39	4.11	2.47	23.29	....	....	29.23	469
476	**Pure Raw Bone Meal**.........................	Claimed.	4.00	....	....	....	....	....	22.00	....	....	....	
	The Allegh'y City Fert. Wks., Allegh'y, Pa...	Found.	4.55	11.87	17.13	12.85	4.55	2.73	21.68	....	....	26.95	476
492	**Bone Meal**	Claimed.	3.00	....	....	....	....	....	24.00	....	....	....	
	Geo. A. Bell, Wheelersburg, O................	Found.	3.95	9.87	18.93	14.20	4.16	2.50	23.09	....	....	26.57	492
494	**Pure Bone Meal**...............................	Claimed.	4.00	....	....	....	....	....	21.00	....	....	....	
	L. Frank & Sons, Zanesville, O...............	Found.	4.80	12.00	12.83	9.62	9.30	5.58	22.13	....	....	27.20	494
499	**Pure Ground Bone**	Claimed.	3.00	....	....	....	....	....	22.00	....	....	....	
	The E. Rauh & Sons Fert. Co., Indianapolis, Ind.	Found.	2.65	6.62	16.02	12.02	6.48	3.89	22.50	....	....	22.53	499
503	**Fine Raw Bone Meal**..........................	Claimed.	1.50	....	....	....	....	....	27.00	....	....	....	
	The Abbott & Martin Rend. Co., Columbus, O.	Found.	1.20	3.00	14.54	10.91	13.06	7.84	27.60	....	....	21.75	503
504	**Pure Bone Meal**	Claimed.	4.70	....	....	....	....	....	24.60	....	....	....	
	Sol. Mendelson, Elyria, O....................	Found.	4.45	11.12	11.64	8.73	9.91	5.95	21.55	....	....	25.80	504

TABLE VIII.—BONES—Concluded.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia		Phosphoric Acid					Potash (When included)		Total Value	Record Number
					In Fine Bone		In Med. Bone						
			Percent	Value	Percent	Value	Percent	Value	Total Percent	Percent	Value		
508	**Acorn Bone Meal**	Claimed.	3.00	....	....	....	....	....	22.00	....	....	....	
	The Globe Fertilizer Co., Louisville, Ky	Found.	3.85	9.62	20.31	15.23	3.18	1.91	23.49	....	....	26.76	508
509	**Raw Bone Meal**	Claimed.	4.00	....	....	....	....	....	20.00	....	....	....	
	The Globe Fertilizer Co., Louisville, Ky	Found.	4.20	10.50	17.06	12.80	5.39	3.23	22.45	....	....	26.53	509
525	**Pure Raw Bone**	Claimed.	5.00	....	....	....	....	....	20.00	....	....	....	
	The Marietta Bone & Phos. Co., Marietta, O.	Found.	5.40	13.50	10.49	7.87	8.25	4.95	18.74	....	....	26.32	525
543	**Ground Bone**	Claimed.	3.00	....	....	....	....	....	20.64	....	....	....	
	The Rasin-Monumental Co., Baltimore, Md.	Found.	3.25	8.12	16.44	12.33	5.36	3.22	21.80	....	....	23.67	543
545	**Bone Meal**	Claimed.	2.00	....	....	....	....	....	20.00	....	....	....	
	The Buckeye Fert. Co., Columbus, O.	Found.	1.25	3.12	15.04	11.28	8.01	4.81	23.05	....	....	19.21	545
549	**Pure Ground Bone**	Claimed.	4.00	....	....	....	....	....	25.00	....	....	....	
	N. Rassel & Co., Toledo, O.	Found.	5.10	12.75	12.64	9.48	10.77	6.46	23.41	....	....	28.69	549
550	**Acidulated Pure Bone**	Claimed.	3.00	....	....	....	....	....	20.00	....	....	....	
	The Seneca Fertilizer Works, Tiffin, O.	Found.	4.20	10.50	13.43	10.07	7.23	4.34	20.66	....	....	24.91	550
555	**Ground Bone**	Claimed.	3.00	....	....	....	....	....	19.00	....	....	....	
	S. M. Hess & Bro., Philadelphia, Pa.	Found.	3.70	9.25	14.14	10.61	7.29	4.37	21.43	....	....	24.23	555

TABLE IX.—POTASH SALTS.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Potash		Record Number
			Percent	Value	
384	**No. 1 Syndicate Muriate of Potash**	Claimed.	49.00	......	
	James Bonday, Jr., & Co., Baltimore, Md.	Found.	54.06	54.06	384
521	**Screened Hard Wood Ashes**	Claimed.	6.00	......	
	Swift & Company, Chicago, Ill.	Found.	7.26	7.26	521
544	**Sulphate Potash**	Claimed.	50.00	......	
	The Armour Fertilizer Works, Chicago, Ill.	Found.	*47.20	54.28	544

* From sulphate.

TABLE X.—NITRATE OF SODA.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Ammonia.		Total Value	Record Number
			Percent	Value		
256	**Nitrate of Soda**	Claimed.	19.20	.....	.....	
	The Armour Fertilizer Works, Chicago, Ill..............	Found.	19.45	48.62	48.62	256

POTASH MURIATE.

Record Number	Name of Fertilizer and Address of Manufacturer.	Claimed and Found.	Potash		Record Number
			Percent	Value	
257	**Muriate of Potash**	Claimed.	48.50	......	
	The Armour Fertilizer Works, Chicago, Ill...............	Found.	48.28	48.28	257

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED

And offered for sale in Ohio in 1903, but samples of which were *not found* by the Secretary or Deputies on the markets, hence they have not been analyzed, and their valuations do not appear in this report.

MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Fertilizer.	Ammonia	Phosphoric Acid			Potash
		Available	Insoluble	Total	
	Percent	Percent	Percent	Percent	Percent
The Allegheny City Fertilizer Works, Allegheny, Pa.—					
Acid Phosphate	....	14.00—15.00	1.00— 1.50	15.00—16.00	....
Grain and Grass Phosphate	1.00— 2.00	9.00—10.00	1.00— 2.00	10.00—12.00	4.00— 5.00
Special Potash Phosphate	....	10.00—11.00	1.00— 2.00	11.00—12.00	5.00— 7.00
The Alliance Fertilizer Co., Alliance, Ohio—					
Pure Raw Bone	4.60	....	....	22.00	....
The American Agricultural Chemical Co., New York, N. Y—					
Cumberland's Dissolved Bone	....	14.00	....	16.00	....
Detrick's Alkaline Bone	....	10.00	....	12.00	2.00
Milsom's Buffalo Fertilizer	2.50	8.00	....	10.00	1.50
Reese's Dissolved Phosphate of Lime	....	10.00	....	12.00	....
The American Reduction Co., Pittsburg, Pa.—					
Iron City	8.00	9.00	1.00	10.00	2.00
Fred Antener, 308 Ralston Avenue, Defiance, Ohio—					
Star Fertilizer	1.80	1.22	0.44	1.66	0.56

List of Commercial Fertilizers Properly Licensed—Continued.

Manufacturers' Claims.

Address of Manufacturer and Name of Fertilizer.	Ammonia	Phosphoric Acid			Potash
		Available	Insoluble	Total	
	Percent	Percent	Percent	Percent	Percent
The Armour Fertilizer Works, Chicago, Ill.—					
German Kainit	....	....	....	....	12.50
James Bonday, Jr., & Co., Baltimore, Md.—					
Old Reliable Brand, Genuine German Kainit	....	....	....	....	12.00—14.00
No. 1 Syndicate Sulphate of Potash	....	....	....	....	49.00—50.00
The Bucyrus Fertilizer Co., Bucyrus, Ohio—					
Bucyrus Bone Meal	3.00	....	....	20.00	....
Superior Pure Ground Bone	4.00	....	....	22.00	....
The Canton Fertilizer & Chemical Co., Canton, O.—					
Phillips Tomato and Vegetable Grower	1.00— 2.00	7.00— 9.00	....	8.50—12.00	1.25— 2.50
The Continental Fertilizer Co., Nashville, Tenn.—					
Bone Meal	1.00— 2.00	....	....	20.00—22.00	....
Josiah Cope & Co., Lincoln University, Pa.—					
Acidulated Phosphate	....	14.00—16.00	1.00— 2.00	16.00—18.00	....
The E. P. Critchfield Co., Cincinnati, O.—					
Wheat and Grass Phosphate	....	10.00	1.00	11.00	2.00
The Currie Fertilizer Co., Louisville, Ky.—					
Acid Phosphate	....	13.50	....	....	....
Climax Tobacco and Potato Grower	1.25	9.50	2.50	12.00	1.50
Corn and Wheat Special	1.00	10.00	2.50	12.50	1.00

The Farmers' Fertilizer Co., Indianapolis, Ind—					
Dissolved Bone	1.50	8.50	2.50	11.00	....
The Fox Chemical Co., Louisville, Ky.—					
Alkaline Bone	....	10.00	2.00	12.00	2.00
Grain Special	.50	9.00	2.00	11.00	1.50
The Globe Fertilizer Co., Louisville, Ky.—					
High Grade Acid Phosphate	....	16.00	1.00	17.00	....
The M. Hamm Co., Washington C. H., Ohio—					
Fine Ground Bone Meal	2.50	....	....	24.00	....
Charles Hermann, Myrtle, Ohio—					
Pure Bone Meal	5.00	....	....	25.00	....
The Jarecki Chemical Co., Sandusky and Cincinnati, Ohio—					
Indian Brand Gilead Phosphate	3.00	9.00	1.00	10.00	2.00
Indian Brand Ohio Valley Phosphate	2.00	8.00	1.00	9.00	2.00
The Jones Fertilizing Co., Cincinnati, Ohio—					
Raw Bone	4.00— 4.50	....	....	20.00—22.00	....
The Lackawanna Animal Product Co., Moosic, Pa.—					
Alkaline Bone	....	8.00	2.00	10.00	1.62
Big Yield	2.50	6.00	2.00	8.00	5.00
Kali Chief	1.00	7.00	2.00	9.00	8.00
Moosic Phosphate	1.50	7.00	2.00	9.00	1.50
Our Admiral	1.00	6.00	1.00	7.00	1.00
Special Manure	3.00	10.00	2.00	12.00	6.50
Wyoming Guano	1.00	7.00	2.00	9.00	4.00
Geo. W. Mace, Greenville, Ohio—					
The Boss Superphosphate	....	10.00	1.00	11.00	....
Big Crop Bone Phosphate and Potash	....	11.00	1.00	12.00	3.00
Michigan Carbon Works, Detroit, Mich.—					
Banner Dissolved Bone	....	30.00	....	32.00	....
McWha & Sturgeon, Steubenville, Ohio—					
Dissolved Bone Meal	1.25	11.00	1.00	12.00	2.00

LIST OF COMMERCIAL FERTILIZERS PROPERLY LICENSED—Concluded.

MANUFACTURERS' CLAIMS.

Address of Manufacturer and Name of Fertilizer.	Ammonia	Phosphoric Acid			Potash
		Available	Insoluble	Total	
	Percent	Percent	Percent	Percent	Percent
The Newport Fertilizing Co., Philadelphia, Pa. —					
Acid Phosphate	....	14.00	1.00	16.00	....
Farmers' Ammoniated Bone Phosphate	1.00	8.00	1.00	9.00	4.00
The Northwestern Fertilizing Company, Chicago, Ill.—					
Prairie Phosphate	2.00	10.00	....	12.00	....
L. T. Nye, Seville, Ohio—					
Pure Ground Bone	4.00— 5.00	22.00	....	....	....
The G. Ober & Sons Company, Baltimore, Md.—					
Dissolved Bone Phosphate and Potash	....	10.00—12.00	2.00— 3.00	12.00—15.00	2.00— 3.00
Packers' Fertilizer Association, Chicago, Ill.—					
Sure Growth Phosphate	1.00	10.00	....	12.00	....
The Packer Fertilizer Company, Indianapolis, Ind.—					
Bone	3.00	....	....	22.00	....
Phosphate and Potash	....	10.00	1.00	11.00	2.00
Superphosphate	....	14.00	1.00	15.00	....
Guano	1.50	8.50	2.50	11.00	....
The Piedmont-Mt. Airy Guano Company, Baltimore, Md.—					
Harvest King Ammoniated Bone, Grain and Grass Producer	1.00— 2.00	9.00—11.00	1.00— 2.00	10.00—13.00	2.00— 3.00
Piedmont High Grade Farmers' Bone and Potash	....	10.00—12.00	2.00— 3.00	12.00—15.00	2.00— 3.00
Piedmont High Grade S. C. Bone Phosphate	....	14.00	....	....	....
Piedmont Raw Bone Mixture	1.50— 2.50	8.00—10.00	4.00— 5.00	12.00—15.00	1.50— 2.50

The Pittsburg Provision and Packing Company, Pittsburg, Pa.—					
Acid Phosphate	....	13.00—16.00	1.00— 2.00	14.00—16.00	....
Crescent Butchers' Ground Bone	3.00— 4.00	....	....	15.00—17.00	....
Phosphate and Potash	....	9.00—11.00	2.00— 4.00	11.00—13.00	2.00— 3.00
Pure Bone with Potash	3.00— 4.00	12.00—16.00	2.00— 4.00	14.00—16.00	3.00— 4.00
The Rochester Fertilizer Works, Rochester, N. Y.—					
Alkaline Bone Guano	....	10.00	1.00	....	2.00
Animal Tankage	9.50	4.55	....	7.00	....
Dissolved Bone Phosphate	....	14.00	....	....	....
Genesee Guano	2.00	8.00	....	10.00	3.25
Universal Phosphate	4.00	8.00	....	10.00	8.00
Vegetable Phosphate	1.00	8.00	....	10.00	8.00
The Schaal-Sheldon Fertilizer Company, Erie, Pa.—					
Dissolved Bone	....	14.00—16.00	....	15.00—18.00	....
Dissolved Bone and Extra Potash	....	10.00—12.00	1.00— 2.00	11.00—14.00	4.00— 6.00
Grass, Grain and Potato	1.50— 1.75	8.00— 9.00	1.00— 2.00	9.00—11.00	4.00— 5.00
Schaal's Standard	2.00— 2.50	8.00— 9.00	1.00— 2.00	9.00—11.00	2.00— 3.00
The Scientific Fertilizer Company, Pittsburg, Pa.—					
Bone, Meat and Potash	4.00— 5.00	8.00— 9.00	2.00— 3.00	10.00—12.00	8.00— 9.00
Bone and Potash	....	10.00—11.00	1.00— 2.00	11.00—12.00	6.00— 7.00
Economy	2.00— 3.00	9.00—10.00	1.00— 2.00	10.00—12.00	4.00— 5.00
Phosphate and Potash	....	10.00—11.00	1.00— 2.00	11.00—12.00	2.00— 3.00
Scientific Potato	3.00— 4.00	8.00— 9.00	2.00— 3.00	10.00—12.00	6.00— 7.00
Bone and Meat	4.00— 5.00	....	....	16.00—17.00	....
Pure Raw Bone Meal	4.00— 5.00	....	....	22.00—24.00	....
R. Stephens & Company, Ashtabula, Ohio.—					
Buncombe Fertilizer	2.50	10.00	10.00	20.00	2.50
The Tennessee Chemical Company, Nashville, Tenn.—					
Ammoniated Bone	2.00— 3.00	10.00—12.00	1.00— 2.00	11.00—14.00	2.00— 3.00
Bone Meal	1.00— 2.00	....	....	20.00—22.00	....
Ox Phosphate	....	12.00—14.00	1.00— 2.00	13.00—16.00	....
The Virginia-Carolina Chemical Company, Baltimore, Md.—					
Standard Fish Guano	1.00	8.00	....	....	4.00

FERTILIZER LAW.

REVISED STATUTES OF OHIO.

To Regulate the Manufacture and Sale of Commercial Fertilizers.

SEC. 4446*a*. **[How package containing commercial fertilizer to be marked.]** Any person or company who shall offer, sell or expose for sale in this State, any commercial fertilizer, shall affix to every package, in a conspicuous place on the outside thereof, a plainly printed certificate stating the number of net pounds in the package sold or offered for sale, the name or trade mark under which the article is sold, the name of the manufacturer and the place of manufacture, and a chemical analysis stating the percentage of nitrogen, or its equivalent in ammonia, in an available form, of potash soluble in water, and of phosphoric acid, in an available form (soluble or reverted) as well as the total phosphoric acid.

SEC. 4446*b*. **[Person offering same for sale to deposit sample with Secretary State Board of Agriculture.]** Before any commercial fertilizer is sold or offered for sale, the manufacturer, importer, or party who causes it to be sold or offered for sale within the State of Ohio, shall file with the Secretary of the Ohio State Board of Agriculture a certified copy of the certificate referred to in Section One (4446*a*) of this act, and shall deposit with said Secretary, a sealed glass jar, containing not less than one pound of the fertilizer, accompanied with an affidavit that it is a fair average sample.

SEC. 4446*c*. **[Manufacturer, importer, or agent to pay license.]** The manufacturer, importer or agent of any commercial fertilizer, shall pay, annually, on or before the first day of May, a license fee of twenty dollars *on each brand*, for the privilege of selling or offering for sale within the State, said fee to be paid to the Secretary of the Ohio State Board of Agriculture; provided, that whenever the manufacturer or importer shall have paid the license fee herein required, for any person acting as agent for such manufacturer or importer, such agent shall not be required to pay the fee named in this section.

SEC. 4446*d*. **[Analysis to be made by Secretary State Board of Agriculture.]** All analyses of commercial fertilizers sold within the State shall be made by or under the direction of the Secretary of the Ohio State Board of Agriculture, and paid for out of the funds arising from license fees, as provided for in Section Three [4446*c*]. At least one analysis of each fertilizer sold shall be annually made.

SEC. 4446*e*. **[Secretary to publsh, annually, report of analyses made and fees received.]** Said Secretary shall publish annually, a correct report of all analyses made and certificates filed, together with a statement of moneys received on account of license fees and expended for analyses, and any surplus arising from license permits shall be placed to the credit of the agricultural fund.

SEC. 4446*f*. **[Penalty for exposing for sale or selling commercial fertilizers unlawfully.]** Any person or party who shall offer or expose for sale, or sell, any commercial fertilizer without complying with the provisions of Sections 4446*a*, 4446*b* and 4446*c* of the Revised Statutes, or shall permit an analysis to be attached to any package of such fertilizer, stating that it contains a larger percentage of any one or more of the constituents named in said Section 4446*a* than it really does contain, shall be subject to a penalty of not less than two hundred dollars for the first offense, and not less than five hundred dollars for every subsequent offense, to be recovered in a civil action, and the offender, in all cases, shall also be liable for damages sustained by the purchasers of such fertilizers; provided, however, that a deficiency of one per cent. of the nitrogen, potash or phosphoric acid claimed to be contained, shall not be considered as evidence of fraudulent intent.

SEC. 4446*g*. **[Where suits to recover penalties may be brought.]** Suit may be brought for the recovery of penalties under the provisions of this act in the court of common pleas of the county where the fertlizer was offered for sale, or sold, or where it was manufactured; and all penalties so recovered, shall be paid into the State treasury to the credit of the general revenue fund.

SEC. 4446*h*. **[Secretary of State Board of Agriculture may select samples to be analyzed.]** The Secretary of the Ohio State Board of Agriculture, or any person by him deputized, is hereby empowered to select from any package of commercial fertilizer exposed for sale in any county in Ohio, a quantity not exceeding two pounds, which quantity shall be for analysis to compare with sample deposited with said Secretary, as provided in Section Two [4446*b*] of this act, and with the printed certificate found on the given package found on sale.

SEC. 4446*i*. **[All suits under this act to be brought by Secretary State Board of Agriculture.]** All suits for the recovery of fines under the provisions of this act, shall be brought by the Secretary of the Ohio State Board of Agriculture, in the name of the State of Ohio.

SEC. 7002. **[Unlawful sale of commercial fertilizer.]** Whoever sells, exposes for sale, or offers for sale any commercial fertilizer without having complied with the provisions of Sections 4446*a*, 4446*b* and 4446*c* of the Revised Statutes shall be fined in any sum not exceeding two hundred dollars, or imprisoned not more than thirty days, or both, and said fine or imprisonment, or both, shall not be a bar to the recovery of the civil penalty provided for by Sections 4446*f* and 4446*g* of the Revised Statutes.

Report of the Proceedings

OF THE

STATE FARMERS' INSTITUTE,

Held Under the Auspices of the Ohio State Board of
Agriculture, January 12 and 13, 1904.

TUESDAY MORNING SESSION,
January 12, 1904.

The State Farmers' Institute met in the Auditorium of the Columbus Board of Trade Building and was called to order at 10:20 A. M. by Secretary W. W. Miller of the State Board of Agriculture, who said:

I am very glad indeed to see so many present who are interested in the State Farmers' Institute which will now open. The attendance is most flattering so early in the first day.

This meeting will be what you make it and that means that it will be a good one.

I will make no further remarks except to introduce your President, of your choice a year ago, Mr. G. C. Houskeeper, of Bowling Green. (Applause.)

President G. C. Houskeeper: I assure you it affords me a great deal of pleasure to be with you this morning, and yet I can hardly understand how it came about that I was selected as your president, being a comparatively new man and acquainted with so few of you.

I only wish to say that my heart is in the work. I am a farmer by choice—because I love it—and always expect to be found on the farm as long as I am able to follow the plow and handle the hoe.

We are glad to have with us this morning the Williamson Sisters' Quartette. This quartette needs no introduction to this audience. We will now be favored with a selection.

A song, "Voices of the Woods," sung by the Williamson Sisters' Quartette. (Applause.)

PRESIDENT HOUSKEEPER'S ADDRESS.

Ladies and Gentlemen:

We have come here to hold this, another session of our annual State Farmers' Institute. I appreciate the honor you have conferred, in electing me to preside at this time. I considered the institute, last winter, the best of any I had attended, and I trust this one may be as profitable as that was. The season of 1903 was an unusual one, cool and in central and southern Ohio dry. While the crops were below the average, yet prices were fair and our people generally prosperous. It is Governor Herrick now. As good citizens we should give him our loyal support in all that is for the welfare and betterment of all classes.

We are opposed to any change in the game, pure food or tax laws that will make them less effective. We are well pleased, yes, proud of the work of our experiment station at Wooster and expect great things of it in the future. It deserves the hearty co-operation of us all. We are grateful to Prof. Hamilton of Washington Institute, Specialist of the Department of Agriculture, for the assistance he offers to all institute workers. Our State Board of Agriculture is doing all it can, with the means it has to command, to assist the state lecturers to do the best work possible. We are thankful for the harmony that exists between the State Board, Experiment Station, Agricultural College and the institute speakers. This means much to the agricultural interests of our state. We are in favor of a national good road law, a parcel post and a law compelling goods containing shoddy to be so marked. We regret that we are not represented in our legislative halls, as our numbers and importance demand. We need to be better organized.

A live grange in every township would do wonders for the farmer and his family. We have all learned some valuable lessons from our successes and failures in the past. Now is the time to profit by them in our planning for the future. Our State Board has prepared for us an exceptionally good program and the topics are assigned to those who are well qualified to present them.

The ladies have not been overlooked, but their interests will also be considered. Their interests are surely identical with ours, and we gladly acknowledge them as our equal partners. We regret that the opening session of so many of the Farmers' Institutes are poorly attended, and we hope that by some means this may be overcome. Many farmers are availing themselves of the opportunity offered them, by the Agricultural Students' Union of Ohio, to make experiments and observations on their own farms, under the direction of the Union. These experiments will surely be very valuable to us. (Applause).

President Houskeeper: The Quartette will give us another selection.

A song, "Little Cotton Dolly," sung by the Williamson Sisters' Quartette. (Applause.)

President Houskeeper: The next number on the program will be an address, "Some Problems in Ohio Agriculture," by Professor Homer C. Price, Dean of the Agricultural College, Ohio State University, Columbus. (Applause.)

SOME PROBLEMS IN OHIO AGRICULTURE.

Ohio has held a high rank in the agriculture of our country since its settlement in the latter part of the eighteenth century. The opening of the fertile valleys of the Miami, Scioto, Muskingum, and other rich lands of the state drew the best blood of the east. The varied resources of our state have sustained a diversified agriculture that has held its own with the states of much greater area in the Mississippi Valley. There is seldom any lack of appreciation of the importance or greatness of Ohio on the part of a citizen of the "Buckeye State," but we may not all realize the importance of Ohio as an agricultural state. In order to show the relative importance of our state, I have prepared a table from the last census, showing the ten leading states and the value of their agricultural products in 1899:

FARM PRODUCTS.

State.	Value.
Iowa	$365,411,528.00
Illinois	345,649,611.00
Ohio	257,065,826.00
New York	245,270,000.00
Texas	239,823,244.00
Missouri	219,296,970.00
Kansas	209,895,542.00
Pennsylvania	207,895,600.00
Indiana	204,450,196.00
Nebraska	162,696,386.00

This shows, what at first might seem rather surprising, that as an agricultural state, Ohio ranks third and that her agricultural products in 1899 were valued at over a quarter of a billion dollars.

While Ohio does not rank first in the production of any one of the staple agricultural products of the country, neither does she rank low in any of them, but all the lines of agriculture and the staple crops of the north are represented, showing a typical agricultural state. I have tabulated the chief agricultural products of Ohio and their value from the last census, together with the rank of the state as compared with the other states of the country:

Product.	Value.	Rank.
Corn	$48,037,895.00	7
Wheat	32,855,834.00	2
Hay and forage	29,047,532.00	4
Live stock sold	40,873,674.00	5
Dairy products	25,383,627.00	6
Poultry and eggs	19,127,778.00	3
Vegetables	12,354,407.00	3
Oats	10,236,251.00	8
Orchard products	6,141,118.00	4
Potatoes	5,750,068.00	5
Tobacco	4,864,191.00	4
Wool	4,299,025.00	2
Forest products	5,625,897.00	4

The relative importance of an industry is not shown entirely by the capital invested or the annual income from it, but rather from the persons engaged in the industry, and I have tabulated the number of persons engaged in agriculture in the ten leading states mentioned in the first table:

PERSONS ENGAGED IN AGRICULTURAL PURSUITS.

State.	Number.	Rank.
Iowa	371,604	6
Illinois	462,781	3
New York	375,990	5
Ohio	414,662	4
Texas	644,634	1
Missouri	463,293	2
Kansas	271,252	9
Nebraska	186,587	10
Indiana	342,733	7
Pennsylvania	341,712	8

As shown by these figures, over four hundred thousand or ten per cent. of the population of our state are engaged in some line of agricultural pursuits.

I spoke in the beginning of the fact that Ohio has held its own against the development of the prairie states of the Mississippi Valley and this is shown not only in the total amount of agricultural products raised by the state and the number of persons engaged in agriculture, but also by the number of farms in our state. In 1850, Ohio is reported as having 143,807 farms and as being the second state in the Union in number; in 1900, the number of farms had risen to 276,719 and Ohio ranked third.

The question of land tenure and ownership is one of the perplexing economic questions of the day and we naturally look for the percentage of farms operated by tenants to be larger in the older states where the farms have become exhausted and the owners have moved to the new western lands. In 1900, 64.7 per cent. of the farms in the United States were operated by the owners and 35.3 per cent. by tenants. It is an interesting fact that in the three leading states in agricultural products, viz., Iowa, Illinois, and Ohio, the percentage of farms operated by owners was the highest in our own state. In Illinois, 60.7 per cent. of the farms were operated by owners; in Iowa, 65.1 per cent.; and in Ohio, 72.5 per cent., showing that nearly 8 per cent. more of the farms in Ohio were operated by owners than the average for the United States.

I have presented you these statistics and comparisons that a better understanding might be had of the relative importance of Ohio in the agriculture of our nation. Let us now turn to some of the problems that are confronting this industry. The past fifty years has witnessed an evolution and a revolution of the agriculture of our state as well as the agriculture of the nation. It has been the transition period in which we have passed from hand labor to machine labor. The mowing machine appeared by 1850; the reaper by 1860; the self-binder by 1880; and coupled with these inventions came the improved cultivator, planter, thresher, and more recently, the corn harvester, husker and shredder, ensilage cutter, and the silo.

Almost as important as the improvements of farm machinery and its influence upon agriculture have been the increased facilities for transportation. When Ohio was first settled, the canals and the national roads were the highways of commerce. Live stock was driven across the mountains to eastern markets and the grains were floated down the river to the southern markets, but today our state has become a network of railroads, connecting us with all the large markets of the world, but the improvement of our railroad transportation has not been altogether an unmixed blessing to Ohio agriculture. They have drawn the state into competition with the prairie lands of the Mississippi Valley and the wheat lands of the northwest and the live stock from the ranches of the western states. The circle of competition has widened as well as the circle of markets, and today the farmers of Ohio must compete with the farmers of South America, Europe, and Australia in the marketing of their products.

The social changes that have taken place have been almost as great as those already mentioned. The rural mail delivery, the telephone, and the interurban electric cars, and the centralized schools have revolutionized life in the country and have taken away from it its isolation.

All of these changes have brought new problems and the questions which the farmer of today has to deal with are very different from those of a generation ago. They call for a readjustment of the agriculture of the state and one of the most important problems facing the farmers of Ohio of today is to adjust themselves to these rapid changes that have taken place in the last few decades. We are all inclined to follow the beaten path and to do things as our fathers did them or to do things because our fathers did them, losing sight of the fact that our fathers' condition was not the same as ours and that if it had been so, they probably would not have done things as they did do them. There is need of a wider vision of the surrounding conditions and the study of the lines of agriculture which are best adapted to each particular locality. Successful farming does not consist of simply raising large crops or fine animals, but rather in raising the crops which are the most profitable for our conditions and raising the animals which will give the largest returns for the feed they consume, and I believe that success in farming is more often due to the proper management of our farms than it is in raising large crops or getting large returns for the feed consumed by our animals. Too many farmers are raising corn and wheat who ought to be growing fruits and vegetables or dairy products. I do not know a better illustration of this than is shown in the eastern and southern counties in our state which were once famous for sheep raising, but when sheep raising became unprofitable, owing to the competition of the western states, they drifted into general farming, resulting in the depletion of their farms and bankrupting of their owners. These counties lend themselves naturally to fruit growing, dairying, and sheep raising, and should be used for these purposes and I have no doubt these industries will grow in them during the coming years.

This question of adjustment of farm management is a purely local one and must be settled by every farmer for his own conditions. The markets, the fertility of the soil, the question of labor, transportation, and the success of others in the same line of work must be taken into consideration. A mistake that is often made by farmers is to regard all others in the same line of work as themselves as competitors, when in fact they are really mutually helpful to each other. Take, for example, the raising of pure bred live stock: Buyers will go to a neighborhood much quicker if three or four men are breeding the same kind of stock than they would if there were only one breeder in the locality. I was impressed with a statement which I heard in an apple shippers' convention a few years ago, which illustrates my point: An apple buyer was speaking of the advantage of growers being situated close to each other and he said: "There are plenty of buyers who would not go across the street for one wagon load of apples who would go across the continent for one hundred car loads." The same thing is true of other products. Large quantities will attract buyers. I mention this fact because often a locality is exceptionally well adapted for the production of some product, but if only one man were to produce it, it would be difficult to find buyers, while if several would go together, buyers could readily be found and in the question of farm management we must take into consideration the line of farming which our neighbors are doing.

For over one hundred years Ohio has been settled and for the last fifty years we can say that practically the entire state has been under cultivation, and now the problem has arisen, which must arise in every country after the store of virgin fertility has been exhausted—how can we maintain our soil fertility? This is a question that touches every farmer whether dairyman, fruit grower, stock farmer, or grain farmer—the fertility of the soil must be maintained. The available plant food that had been stored up for generations has been drawn out of the soil by continuous cropping and removing everything from the land. Such exploiting of the virgin soils of the state has depleted many of them and the question now is—how may they be restored to their former fertility and how may the fertility of those which have not yet been depleted be maintained? This question has been and is being answered in four ways:

(1). The raising of live stock,
(2). By the use of commercial fertilizers,
(3). By raising clovers and other legumes,
(4). By thorough tillage and cultivation.

The first way mentioned of maintaining soil fertility, viz., by the keeping of live stock and feeding up the crops raised on the farm and then returning the manure to the land, is the oldest and best way of maintaining soil fertility. As long as a man can feed all of his crops on his farm and take care of the manure, returning it to the land, he need not worry about his farm becoming exhausted.

It is a matter of interest to note the per cent. of crops raised in the state which are fed to live stock. In 1899, the value of crops raised was $151,226,461, and the amount fed to live stock was $56,245,050 or 38 per cent. of all crops raised.

As desirable as it is to feed all of the crops raised on the farm, we cannot overlook the fact that a part of our crops must be sold in the markets, and that a part of our farms must remain grain-producing farms.

We do not live by meat alone and the bread supply of our state must be raised and a part of our lands must be devoted to crops which will remove fertility from our farms. We are able to counteract this loss through the use of commercial fertilizers and this method of maintaining soil fertility has been coming into practice rapidly in the last few years. In 1880, the value of commercial fertilizers used in the state was $550,000, in 1890, $1,602,869, and in 1900, it had risen to $2,695,470. It is an interesting fact to note that the use of this commercial fertilizer has been in the sections of the state where the fewest live stock are raised and also in the parts of the state which are naturally least adapted to growing farm crops. I have no criticism to offer on the proper use of commercial fertilizer, and where intelligently applied it has proven a great boon to agriculture, but too often it has been used without any thought of permanent improvement and simply to stimulate an exhausted soil to yield another crop. The use of commercial fertilizer is probably shrouded with more mystery than any other operation on the farm. The analyses printed on the sacks are designed to answer the requirements of the law and are meaningless to nine-tenths of the people using the fertilizer. The only standard that the average farmer has for judging the merits of a particular brand is his former experience, the reliability of the company manufacturing it or of the agent selling it. Commercial fertilizers may be made one of our most valuable means of maintaining soil fertility, but it is a serious problem for the farmers of the state to know how to use them intelligently.

One of the most valuable methods of maintaining our soil fertility is through the use of leguminous plants, which have the ability of storing up the free nitrogen of the air and adding it to the soil and thus supplying the element of the plant food which is most likely to become exhausted. Where commercial fertilizers are used in connection with the leguminous plants, the fertility of our land may be maintained with a comparatively small cost. Our soils do not become exhausted because they no longer contain the plant food which the plant needs for its growth, but rather because this food is not in an available form. This wise provision of nature prevents the prodigal farmer using up the heritage of future generations. It is estimated that the first foot of even the poorest soil contains enough of plant food to raise one hundred average farm crops.

It has been found that thorough cultivation and tillage will unlock this plant food and make it available and by some this matter of the physical condition of the soil has been regarded as more important than even the chemical composition. Although our farm lands have been cultivated for nearly one hundred years, the intelligent use of the methods, which I have mentioned, will not only maintain the fertility of Ohio lands, but restore much of the fertility which has been lost through the wasteful practices of the farmers of the past.

As important as these problems are, which I have mentioned, yet they are not the most important of Ohio agriculture today, and it seems to me that the greatest problem and the one in which the solution of all others rests is the question of agricultural education.

The evolution that has taken place in the last few decades has made agriculture an industry which demands that its successful followers shall be educated. Ohio conditions demand as never before that the farmers of the state must be educated and the problems will only be solved by trained men—men trained in the sciences of agriculture. The work of education is being done by the agricultural press, our farmers' institutes, our Agricultural Experiment Station, and our Agricultural College. The influence of each one of these has been far reaching and their work is so closely related that each advances as the others advance. The agricultural press, the farmers' institute, and the Agricultural Experiment Station are training the farmers of today, the men who are actually in the harness and making Ohio agriculture what it is, but the work of the Agricultural College is to train the young men who will make the agriculture of the future and the men who should be the leaders of Ohio agriculture in the future. It has long been recognized that the doctor, the lawyer, and the preacher must spend years in preparation for their life's work, but it has only been thought necessary for a short time that the boy who intends to farm should make any special preparation, and even now the idea is widely prevalent that this preparation can be gotten in much less time and may be much less thorough than it would need be if the boy were studying for the professions.

In comparing the agriculture of Ohio with that of the other states, I did not speak of the constituents of Ohio agriculture as compared with those of other states, but such a comparison would be very favorable to our own state, for we do not have the large body of foreign population which is found in other states engaged in agriculture. I believe that our agriculture is constituted of a class unsurpassed for intelligence and education and equalled by few states in the Union.

Our public school system has been good and the problem of agricultural education is very different from what it is in many of the other states. There is not the necessity for short courses and special courses that there is where students lack primary training and I believe that every young man who expects to farm in Ohio and who has any taste for study and who finishes the eighth grade of the common school by the time that he is fourteen years old and the high school by the time that he is eighteen, will be well repaid by taking a four-year course in our College of Agriculture and that in five years after leaving school he will be farther advanced than he would have been had he gone into farming after completing his high school course of study, and I thoroughly believe that the conditions of Ohio agriculture of today are such that they not only justify, but that they demand that the young manwho would thoroughlyprepare himself for farming should secure an agricultural education as broad and as thorough as can be given by any college, and I believe just as thoroughly that Ohio agriculture never offered opportunities for a man with such a training that it offers at the present time, nor do I believe that any other state offers better opportunities than Ohio.

If the time permitted, I would like to speak of the necessity of teaching some of the elementary principles of agriculture in our centralized schools and township high schools. Ohio today has over 275.000 farms, assuming that these farms are taken charge of by men who are twenty years old and that the average length of active management is twenty-seven and one-half years, which I have no doubt is really longer than is the case, owing to the many changes which are made and that such length of service would require an average age of forty-seven and one-half years. This would mean that ten thousand men entered into active management of a farm for the first time each year. We now have approximately one hundred and fifty new students to enter our College of Agriculture each year or one and one-half per cent. of the number which begin farming for the first time every year. Think of it! The number is so small as to seem almost insignificant when compared with the number who need education, and I do not anticipate that the time will ever come when more than a comparatively small percentage of this number which begin farming each year will get their training in an agricultural college, and the only way of reaching this mass will be through our public school system and I hope to see the time in no distant future when some courses in agriculture may be taught in our rural schools. I believe that Ohio farmers appreciate the need of education as the farmers of few other states do, and that they are willing to give a generous an abundant support for every effort to further the interests of agricultural education. I believe that our College of Agriculture has a future unsurpassed by any college in the country and that we have the constituency, the state, and the natural conditions which justify Ohio's College of Agriculture always remaining one of the leading colleges of the country. At the present time, however, we are embarrassed for lack of support from the state, and the point has been reached where the work must not only stand still, but actually go backward if support is not given. The farmers of the state have not fully understood the condition of the college and the work that it is trying to do. Last fall, when a few representatives of the different agricultural organizations were invited to meet at the college to carefully investigate its conditions and needs, there was a unanimous sentiment expressed that the agricultural interests of the state must see to it that the needed support was provided by the incoming legislature. The College of Agriculture and the University, of which it is a part, belong to the state and every tax payer contributes to their support, and they should be supported in manner commensurate with the interests represented.

The agricultural interests of our state by the last census were by far the largest interests in the state and amounted to nearly $1,200,000,000.00. The average yearly income from agricultural products amounted to over a quarter of a billion dollars, and yet our College of Agriculture has building and equipment that would not be tolerated by an up-to-date modern farmer—live stock of the most mediocre grade, while the needs of other departments are just as apparent, but there is no discount on the quality of students that we have. They are the equal of those of any other institution in the country and it is their right to have the privileges of the best agricultural education that it is possible to give. However, this cannot be done unless additional support is provided. Last summer, Profesor Hunt was taken by another state, whose agricultural interests are far less than the agricultural interests of Ohio, because Ohio could not afford to keep him. Professor Hunt was a man whose heart was in his work, and what he has done for Ohio agriculture will stand as a monument to his name. Neither is this the first case in which men who have just reached the zenith of their power have been taken by other state institutions, and Ohio has thus been made the recruiting station for neighboring states. Just now is a critical time in the progress in our agricultural education that demands the loyal support of the farmers of our state. The work has been well established and will go forward if given the opportunity.

In closing, let me repeat that Ohio ranks now and will remain to rank as one of the foremost agricultural states in the Union. The agriculture of the state

is diversified and every line is represented. The rapid changes which have taken place the past generation have brought new problems. The business of farming has become more and more complex and the conditions of the day demand that the successful farmer shall be educated. The conditions of Ohio agriculture demand that the young man who expects to farm shall be thoroughly trained and in the education of the farmers of the state rests the solution of the other problems of agriculture. An educated farming class means a prosperous agriculture that shall continue to hold Ohio at the front, not only in agricultural products, but to furnish the leaders in politics, religion, and education, as well as in agriculture. (Applause.)

Mr. S. H. Ellis, of Warren County: There is just one point I would like cleared up. You say in round numbers ten per cent. of Ohio's population is engaged in agriculture; you stated that there were two hundred and seventy-five thousand farms and you give over four hundred and fourteen thousand farmers. According to this there must be some old bachelors or old maids, for that does not make two to a farm.

Professor Price: You understand by that the ten per cent. represent the persons who are actively engaged in productive agriculture.

Mr. Ellis: It does not mean the farmers' wives?

Professor Price: No, not unless they are managers of farms. I think that distinction is made, those who are actually engaged in productive agriculture and not meaning the farmer's wife. In cases where women are managing farms they would be counted, as I take it. Where the boys are working the boys would be counted in.

Mr. Ellis: If I remember correctly it is considerably over forty per cent.

Professor Price: I think the rural population depending upon farms at present is about thirty-four or thirty-six per cent.; I know it is up in the neighborhood of forty per cent. About eight per cent. of the population is engaged in manufacturing, eight and three-tenths, I believe; and in Ohio it is, I believe, about ten per cent. of the producers, but that does not represent the families.

Question: Are you able to tell us, taking into consideration the area of the states, whether or not Ohio has more or less farmers according to its area?

Professor Price: I think the average acreage is eighty-eight. The size of our farms is smaller than in many of the other states, but I think, for the area, Ohio, in number of farms, would rank ahead of the other states.

Doctor W. I. Chamberlain: Doesn't Ohio produce more dollars per acre than the other states, in proportion to the area?

Professor Price: You take this from the first table. Iowa has a production of three hundred and sixty-five million and her area is fifty-six thousand square miles; Illinois has a production of three hundred and forty-five million and her area is practically the same; Ohio has two hundred and fifty-seven million and her area is forty thousand square miles.

Question: Have you figured Ohio's rank in per capita production of wealth?

Professor Price: No, I have not.

Question: In what way do you account for it that Iowa has so much greater return, but still so few engaged in agriculture?

Professor Price: The farms are larger.

Question: I would like to ask why, in the law in reference to the marketing of commercial fertilizers, the terms therein used should be confusing. Why can't we have the Illinois law, which requires simply the contents in nitrogen, potassium and phosphorus to be stated? I understand in Illinois this result was brought about both by the influence of the farmers and the influence of the commercial fertilizer manufacturers. Why can't it be so here?

Doctor Chamberlain: Mr. Chairman, in Ohio, I was responsible for the passage of the first law, which is essentially the law now. Instead of phosphorus we say phosphoric acid, for that is the form in which it is used; instead of nitrogen we use the term ammonia, for that is the more common form; instead of potassium we say potash. We have no law forbidding them to put on certain other things and there is where the confusion comes in. The only change in the law that would be necessary would be to require them to put on those three things and nothing else. For example they say "bone phosphate." Well, that has a little more than twice as much as the phosphoric acid, it counts in the lime in the bone, and they put on a lot of other things which tend to confuse. All the change we need in the law is to require the three valuable constituents to be put on and nothing else. (Applause.)

Director Charles E. Thorne, of the Ohio Agricultural Experiment Station: Taking up the subject-matter of this excellent paper which has just been presented, I wish that particular emphasis could be put upon the idea that he suggested there that in the centralized township high schools which are now making their way over our state, attention should be given to the introduction of studies bearing upon the elementary principles of agriculture. Take the illustration which the speaker gave us, of the fact that of the ten thousand young men who are going on the farms this year, not more than one hundred and fifty or two hundred have seen the inside of college walls; and take further the fact that agriculture has ceased to be a manual art, but has become most emphatically an intellectual profession which can only be profitably conducted by men whose intellects are trained. The man who undertakes to carry on the farm today by his own muscular labor alone is worth about a dollar and a half a day. The management of that farm involves an outlay several times that amount. You can not employ a man to do intellectual work for you for less than from five to ten or twenty dollars a day. The farmer who is to be worthy of his calling, who is to make his farm a success, must use intellect such that he can command, that which is of that character, and he can only command it as his intellect is trained, such as learning the rudiments of scientific agriculture, and that he can only learn now through such as has been shown through some different instrumentality, some different organization from any that we have yet found. If we shall have in every township in the state an agricultural high school, in which our young men and young women shall be taught the rudimentary principles of agriculture, then there will be work for these one hundred and fifty graduates of the agricultural college which they have not now. There in those schools is where we want them. If this college of agriculture never sent a young man or a young woman directly back to the farm, but sent them all to be teachers of these township schools, it would confer an inestimably greater benefit upon the agriculture of the state than can possibly be conferred by their going back simply to become farmers.

We want educated farmers and we must have them through some such mechanism as this. We can not send all our ten thousand men to the State University, but we can have them trained by students of that university right in our own neighborhoods and trained in the elementary principles of agriculture.

Professor Price rightly said that there are many young men who will not become students, young men who have not the intellectuality—what shall I call it—bias, cast, grasp, which enables them to take hold of books, and out of that dig the knowledge they need, and yet through other instrumentalities, and especially through the laboratory method, which has become the method of modern instruction, can be made to see the facts. When we learn to combine all these principles and especially when the farmers at their homes, through the development of these higher schools of agriculture in their own neighborhoods, make a class for young men trained in the university to go there and spread their training, we shall have such an advance in agriculture as never has been dreamed of in our state before. (Applause.)

President Houskeeper: As we have two more papers, we must proceed.

The next on the program is an address, "Corn Breeding as Carried on by a Farmer," by L. H. Goddard, of Washington Court House.

CORN BREEDING AS CARRIED ON BY A FARMER.

Corn breeding by the "ear-row" method as a practical work for a practical farmer was first suggested to me something over a year ago by my friend Prof. Thomas F. Hunt, who at that time was Dean of the Department of Agriculture at the Ohio State University and with whom you are doubtless all more or less acquainted.

While a number of years' acquaintance with Prof. Hunt, both as a friend and a business man, had given me a large amount of respect for him as a practical agriculturist, I must confess that when he first mentioned this subject to me I

felt that, for once, he was getting just a little bit too theoretical to suit my case. It was not until a later date when I saw the results of such a breeding plot which had been grown on the University farm, that my interest in the matter was thoroughly aroused.

A limited observation of farming operations in Ohio indicates to me that my opinions at that time on this subject are fairly representative of those of many of Ohio's best farmers today. Granting, then, that this statement is true, let us turn for a moment to the work of stock breeding. I feel sure there is not a farmer in this room today who does not fully understand and practice the principles of stock breeding. Indeed, I presume there are very few reputable farmers in the state of whom this statement can not be made.

In the county from which I hail the poorest of renters realize the necessity of pure bred sires for all grade herds and aim continually to improve their herds by this method.

Permit me to state to you, with a full realization of what I am saying, that plant breeding is just as important a line of work on the farm as is stock breeding; that, for the money invested, it is a much more remunerative one. For $5 or $10, you can get just as good a start in plant breeding, more especially corn breeding, as you can in cattle breeding with $5,000, or $10,000. The gross income will not be so great from the corn breeding as from the cattle breeding, and likewise the risk will not be so great. But the net income, with the greater majority of breeders at least, will be greater with the corn than with the cattle. With cattle the returns are very slow, while with corn they are very quick.

Upon what foundation principle is the pure bred live stock business based? The answer to this must be, of course, heredity, the ability of an individual to reproduce itself together with all its good and bad qualities. The very same principle, hereditary, underlies corn breeding—the ability of an individual stalk of corn to produce itself.

Let us turn back for a moment to Old England, the early home of many of of our prominent breeds of live stock and learn, if you please, how these breeds were established. I doubt not there are many live stock breeders in this state today who have no ideas regarding establishing a pure bred herd other than those associated with widely advertised sale of fancy animals with fashionable pedigrees. It is, of course, unnecessary to state to this audience that such conditions did not exist in the early days. The pioneers in this work selected an animal here and an animal there which, in their opinion, had exceptional individual merit. These animals they placed in their breeding herds and there observed them very carefully, especially in regard to their ability to reproduce themselves. It is, of course, unnecessary to state that all good animals do not necessarily produce equally good animals. In these herds the animal which did produce well were retained and those which did not do so were discarded. Finally, after years of selection and discarding, the type which our pioneer breeder had in mind became fixed upon his herd to such an extent that people buying animals from him could be assured that these animals would produce animals similar to his. Please observe closely this point, for it is the practical application of the law of heredity in the pure bred business of today. Were it not for this a pedigree would be valueless.

At first each breeder kept a private record of the work done in his own herd, but at a later date those who were aiming at the same type of animal united in forming an association that would keep the records of all, and of course make them of more value.

Such was the beginning of the pure bred live stock business with which we are all so familiar today. The pure bred corn business is making just such a start right now, the only very great difference being that, while our early live stock breeder had to work entirely alone and unassisted, the corn breeder of today has to assist him at every step, an Agricultural Department upon which our national government is spending annually, in addition to the appropriations of the various states, over $5,000,000.

In this work the Experiment Stations can only advise and assist. The body of the work, owing to its peculiar nature, must be done on the farms by the farmers, just as live stock breeding. Farmers must select stocks of corn which as they grow show exceptional merit and, by planting seed from the ears which grew on these stalks, that from each ear in a row by itself, ascertain to what extent each has the heriditary ability to produce itself. If the plot of ground upon which these rows are grown is uniform, if the rows each have the same number of hills and each hill has the same number of stalks per hill, a careful study of these rows, each grown from a different ear, ought to give us some idea of the hereditary ability of each of the ears to reproduce itself and likewise ought to indicate to us which ear has the heriditary ability to produce the greatest number of bushels of corn per acre. We have here the record of such a plot grown upon our own farm this season. This plot was located in the midst of a field of the same variety and was cultivated at the same time and in the same manner as the rest of the field. The results given in pounds of ear corn are the average of two rows each planted from the same ear, but in different parts of the plot in order to eliminate as much as possibble the variation in productive power of the soil.

Ear.	Lbs.	Ear.	Lbs.
No. 1 produced	52½	No. 14 produced	52
No. 2 produced	44½	No. 15 produced	52
No. 3 produced	51	No. 16 produced	49
No. 4 produced	49½	No. 17 produced	56½
No. 5 produced	49½	No. 18 produced	51
No. 6 produced	50	No. 19 produced	57½
No. 7 produced	46	No. 20 produced	56½
No. 8 produced	54½	No. 21 produced	60½
No. 9 produced	59	No. 22 produced	63
No. 10 produced	44	No. 23 produced	56½
No. 11 produced	41½	No. 24 produced	51
No. 12 produced	52	No. 25 produced	55½

Ear No. 13 produced 47 pounds. Average of all, 52. The conditions under which this plot was grown were made just as fair to each ear as was possible for us to do. The soil of the plot was apparently uniform, no manure being added for fear it could not be evenly distributed. Seed from ear No. 1 was taken to plant rows No. 1 and 26, from ear No. 2 for rows 2 and 27, etc., until rows No. 25 and 50 were planted from ear No. 25. The seed ears were as near equally good as it was possible to get them. Therefore the variation you have observed in this table must be due, largely at least, to the variation in the hereditary ability of these seed ears.

Now as to the records of this work, while each breeder, of cither plants or animals, should keep a private record the plant breeder has an especial advantage in that the state, instead of a record association, keeps his public records for him. While this may not always be true it is so at the present time and will remain so for some years I presume. The Ohio Student Union—the child of the University and the Experiment Station—has this work in charge for Ohio breeders. The description of the 25 seed ears is filed July 1, and of the field plot January 1, following. Blanks are provided for this purpose by the Union. The seed ears of each successive breeding plot will doubtless be selected largely from the best producing rows of the plot of the preceding year, care being taken to record from which row each ear came, so that the line of ancestry can be traced back just as surely as in the live stock pedigree. On the basis of this record pedigrees will be issued to accompany seed which is sold just as for live stock.

Corn breeders have another very marked advantage over live stock breeders in that the field of operations is so much larger. To illustrate: While a breed or type of cattle or hogs that is well adapted to southern Ohio is also well adapted to northern Ohio, the variety of corn that does best in southern Ohio will scarcely mature at all in northeastern Ohio. Indeed, each county should have corn breeders developing varieties of corn that are especially adapted to that county, its soil and its methods of farming. While the field is so large it is, at present, almost unoccupied. In 1903 there were but 5 recorded plots in Ohio. This number bids fair to be much augmented in 1904, yet I see no chance of the work being overdone. Indeed if one never did anything but grow seed for his own use he would be well repaid for his extra labor.

Counting all the extra time put on our own plot this year—planting, thinning, extra bother cutting, husking, etc.—at $1.00 per day, the plot cost us between $4 and $5. Now if we have need for five bushels of seed next spring, which we have, we should have paid $1 per bushel for the extra value of this seed, regardless of any seed we may sell our neighbors. It surely is worth this much to us, yes, many fold more. In fact I can not help but think the time is right on us when intelligent business farmers will consider from $3 to $5 per bushel a reasonable price for seed corn selected from a field which has been grown from well bred seed. Just as soon as it has been proven to them that such seed will produce as much as five bushels per acre more than the ordinary kind, and this certainly ought not to be hard to do, they will see that the seed is easily worth $5 per bushel. It has often been a matter of query to me why farmers, in general, would so freely invest from 40c. to $1.50 per acre for seed oats and from 90c. to $3.00 per acre for seed wheat, and yet begrudge 25c. per acre for seed corn for the greatest crop of all.

The only explanation that has ever satisfied me in the least is either that they have never given the matter any thought at all or that they had become convinced that corn was corn, that none was any better than any other. It is one of the missions of the corn breeders to educate these people. Fellow corn breeders, let us unite in teaching Ohio corn growers that, while they can and should vastly increase their yields of corn by improved methods of cultivation, that indeed pure bred stock never does well in a scrub farmer's hands, yet that all this is expensive, frequently unduly so; whereas heredity is a silent force which will increase their yields at no expense whatever except the extra price paid for the seed.

It may be there are some in this room who contemplate taking up the work of corn breeding during the coming summer, and if such is the case a few suggestions may not be out of order. It is, of course, understood that advanced farmers are original thinkers who do not follow beaten paths, and therefore we wish it understood that whatever we have said or shall say on this subject of corn breeeding is offered merely as experience or suggestion on our part to be weighed most carefully before used by the interested hearer.

We would urge first to be very careful in the selection of a variety with which to start breeding. You cannot afford to spend time improving a poor variety. Be sure by actual experience that you have a very good, if not the best, variety for your locality that the country affords. By this means you may save years of time. Be sure to get a variety which has a fixed type, such a one that a wagon load of it husked in the field will show a uniform character of ears. It is very hard to find such a variety that has originated from a cross of two radically different varieties. Select the color that pleases your eye. This is more important than you may think. The western breeders are very emphatic that this should be one pure color, either white or yellow, but on this point we are not quite so positive as are they. In selecting this variety do not forget that it may already be right in your neighborhood, perhaps on your farm. Do not select some widely advertised variety because it does well somewhere else. Remember that every farm is a law unto itself, that the variety which does well on somebody else's farm will not necessarily do best on yours and in your locality. Be very sure you are right and then your heart will be in the work when you go ahead.

After having selected the variety and having established it on your own farm you are then ready to select the 25 ears. Here you will have abundant opportunity to exercise again your ability as a professionall farmer. In doing it do not lose sight of the goal toward which you ar aiming. For want of a better goal I would suggest "the greatest number of pounds of merchantable shelled corn per acre." Make all the use of the corn score cards you can, but do not forget your main object. Do not pay too much attention to fancy points. It may be, in fact Dr. Hopkins suggests, that a well capped tip may be a positive injury. It may be that a tapering ear will produce more corn per acre than a cylindrical one. Do not be carried away with the per cent. of grain per ear of corn. It is pounds per acre you wish. Remember finally that the score cards are, like all judgments, subject to correction, indeed are creatures of growth, that it is your mission as a breeder to assist in revising them, that on the basis of your recorded work they must surely be revised as the years go by.

In our own experience the plot can best be grown in the midst of a large field of the same variety. Even in this case it would be well to have not less than 20 rods of corn intervene between the plot and any other field of corn. While an isolated plot would be better if it were practical, the average small farmer in Ohio can not have such because of the mixing with other varieties.

You have doubtless observed that thus far in this discussion reference has been made only to controlling the female element of the corn plant, the silk. You can readily see what a fine field of work opens up for the breeder who cares to go still further. I may say that it is our present expectation to undertake some of this work the coming season. We expect to plant several rows each from a different ear from which the tassels will all be carefully pulled as soon as they start to shoot. Then we shall plant two rows clear around the plot from still a different ear upon which we shall let the tassels grow. Thus you see we shall have the internal rows as dams and the external rows as sires.

Finally, I may say, in making all these selections be original, do original thinking, remember that this is a vast field full of wonderful possibilities and that he who uses his brain the most in working it will be the most successful.

Those of you who have been keeping in touch with the work of the western corn breeders are no doubt wondering why I have not had a great deal to say about the protein content of the corn and breeding to raise this content. You are all of you doubtless familiar with the statement that ordinary corn is too carbonaceous—too much inclined to produce fat rather than growth on most farm animals, that in order to get best results in feeding operations it is usually desirable to add a certain amount of high protein food, such as bran or oil meal, to the ration and that this high protein food is usually much more expensive than the corn. Now if by breeding methods we may succeed in raising the protein content of corn so that it may eventually become a perfect ration for growing animals without the addition of the more expensive protein foods it would seem that we would have a condition almost ideal. Just such a condition as this is being wrought at the Illinois Experiment Station under the leadership of Dr. Cyril G. Hopkins and the work is proceeding at a most wonderful pace. Starting with corn with an average protein content of about 11 per cent. they have by those breeding methods in little more than half a decade produced corn which had as high as 16 per cent. and as low as 6.5 per cent. protein. In other words they have increased the protein content of corn almost 50 per cent., i. e., they have grown single ears of corn fully as good as oats for feed, and made this marvelous change in only six years. Breeders all over Illinois are fast following suit and surely we may expect some practical field results in a very short time.

This theory, substantiated by facts as we find it, is surely beautiful enough to enthuse any but the most cold blooded, and I am free to acknowledge that I succumbed to it. Last year the Ohio Station made chemical analysis for me of 47 different ears of corn from which I selected the 25 ears to be used in our own breeding plot, and the plot was arranged on the high protein plot plan.

One day last summer, while mowing down a crop of clover to be left on the ground to enrich the soil—we have a very badly worn farm which we are trying to build up as fast as we can—it occurred to me to wonder where this extra protein which I was trying to breed into our corn came from, to wonder if the high protein corn idea was not diametrically opposed to the idea of improvment of the farm. We know that all plants secure their starch from the air, whereas the legumes only—clovers, soy beans, etc.—secure their nitrogen from the air. We also know that corn seems to be the pre-eminent starch plant of this portion of the world to-day. Why then shall we try to pervert nature by attempting to grow protein in our corn instead of the legumes? On the rich western plains it may be all good and well to disregard this point, but on our worn Ohio farms is not the extra drain from our fields of 30 to 40 lbs. of nitrogen per acre a matter that should receive our careful consideration, especially when we remember that we may grow this nitrogen or protein in other plants that will actually build up instead of run down the soil? Why on the contrary shall we not reduce the protein content of the corn? Dr. Hopkins has shown us how to do this also, you will remember. To go a step further, allow me to ask if on a worn farm would it not be natural to expect that a variety of corn which was low in protein would actually produce more bushels of corn per acre than one which required more of that element? In other words, of two varieties of corn of which 40 bushels of one required from the soil the same amount of nitrogen as 50 bushels of the other, might we not expect better yields from the latter variety on worn soils than from the former? In our own breeding plot such was the case almost without exception. Our high protein ears were Nos. 10, 11, 12, 13, 14, 15 and 16. These ears and these only had more than 11 per cent. protein. You will observe by reference to the table that not one of these went above the average in yield, while a number of them were far below it. This one test does not prove anything, but let me ask you, fellow corn breeders, is not this thought worthy of further testing!

I am pleased to be able to say that the Student Union through the kindness of its foster parent, the Ohio Experiment Station, stands ready to assist us by making chemical analysis of the seed ears for a limited number of breeding plots. I leave the question in your hands.

Mr. S. H. Ellis: Had these ears of corn not been formerly bred up?

Mr. Goddard: Well, it was a well-bred variety of corn, had been bred for a great many years, had been selected carefully, but had not been bred up by the ear-row method.

Question: What variety?

Mr. Goddard: I would rather not give it; I am not advertising it.

A member: Just corn?

Mr. Goddard: Just corn. I will say this about it, I consider it one of the best bred varieties in the United States today, but--

Question: How are we going to get it if you don't tell us the name?

Mr. Ellis: It is grown in Fayette County.

Mr. Goddard: It is Reed's Yellow Dent, a corn that has stood first in Illinois for many years.

Question: Were these well selected stock, or were they selected to show variation, one selected for its low vitality and one for the high?

Mr. Goddard: No, just as good an ear as we could possibly get; Mr. Reed furnished part of them himself.

Question: You saw no difference in the number of barren stalks in the number of different rows?

Mr. Goddard: I haven't figures to present that question; I didn't notice.

Question: There were some?

Mr. Goddard: Yes, there were some.

Question: Was that seed directly from Illinois?

Mr. Goddard: Part of it was grown on our own farm and part in Illinois.

Question: Were the grains on the different ears all of the same weight?

Mr. Goddard: The ears differed in weight. I will say there seems to be no relation between the per cent. of grain in this particular plot and the yield per row. The ears varied of course in size.

Question: Do you presume it would pay the ordinary, average farmer to cut the tassels off of the corn for the purpose of saving that for seed for his own use?

Mr. Goddard: There seems to be some theory in justification of that and I will say that Doctor Hopkins, in a recent editorial written on the basis of a communication from him, in the *Breeder's Gazette,* stated that the alternate rows had been de-tasseled, and if it were only taken from the de-tasseled rows an absolute guarantee then could be given that they were not in-bred. But I would prefer that some of the scientists present would answer your question.

President Houskeeper: We only have fifteen minutes yet. Shall we take up Doctor W. I. Chamberlain's paper on "Money in Apples"?

A voice: Have it now!

MONEY IN APPLES.

Mr. Chairman, Ladies and Gentlemen:

Since I began to spray, to cultivate and to mulch the orchard, there has been money in apples for me. I will give you the figures:

In 1897, before I began to cultivate and spray, the gross receipts from my ten-acre orchard were one hundred and forty-two dollars and the net receipts

sixty dollars; the next year the gross receipts were two hundred and thirteen dollars and the net receipts were one hundred and twenty dollars. Then I began to cultivate, to plow and cultivate, and to mulch, and the next year, 1899, the gross receipts were eight hundred and fourteen dollars and the net receipts were five hundred and fifteen dollars. The next year, 1900, I continued the spraying, the cultivation and the mulching, and the receipts were nine hundred and sixty-two dollars gross and seven hundred and twenty dollars net. In 1901, the gross receipts were seventeen hundred and fifty dollars and the net receipts fifteen hundred dolllars; in 1902, the gross receipts were nineteen hundred and fifteen dollars and the net receipts fifteen hundred and fifty dollars; in 1903, the gross receipts were twenty-seven hundred and seventy-one dollars and the net receipts eighteen hundred and eight dollars. This was on ten acres, one half of the trees bearing and the other half barren, so that the net income from the ten acres, or four hundred bearing trees, on my farm is greater than on all of the rest of the one hundred and sixteen acres put together. By net I mean above the cost of packages and picking, not including previous cultivation and spraying.

That the income from the ten acres is greater than from the other one hundred and sixteen is scarcely a fair statement, however, from the fact that the rest of the farm is quite largely subsidiary to this orchard part, in the way of manure.

So, then, I assume that for one who has the proper location, the proper taste, and who will attend to the business, there is money in apples.

As to the question of location, I find that the one essential is what we call frost drainage. It may come either from elevation or from nearby water. In certain peninsulas in Michigan and in the belt along Lake Erie and Lake Ontario they have water protection, but if you will take a census of the largest and most successful commercial orchardists in Ohio, you will find that all of them have frost drainage of one kind or the other, or both. Mr. Cox's orchard, in Lawrence County, is on the hills from four hundred to six hundred feet above the Ohio River and has the very best possible frost drainage, the frost following the lower elevations. Mr. Vergon's orchard, in Delaware County, a most successful one, is about thirty feet above the nearby Olentangy valley and he gets the frost drainage, the frost going into the valley. Mr. William Miller's orchard, in Ottawa County, has the lake protection against frost, and it has very little if any elevation, as I understand, from the lake. Mr. Farnsworth's orchard, in Lucas County, has an elevation of thirty to forty feet above the rather large river, and he has the water protection and the elevation also. My own orchard, in Summit County, is about one hundred feet above Tinkers creek; and then on my own farm within a quarter of a mile there is lower ground, fifty to seventy feet lower.

One year the frost cut everything below a certain level in my orchard, everything—cut the young leaves on the trees, cut the young apples on that part of the orchard. That brought on the successive alternate bearing of the orchard. Those that were killed that year bore the next year; those that were not killed bore that year; formed an alternation, so that the apples now come every year on one or the other half of the orchard.

The location, then, is most important of all. You must have frost drainage, either by a large body of water near by or by elevation. The soil must be drained, either naturally or artificially. I could give some very striking facts on this if I had the time.

As to the preparation of the soil. The best preparation that I know of is a clover turf. Fall plowing is the best. I prefer that the soil should be rich enough to produce, perhaps, not a maximum crop, but a good crop of corn, or wheat, or potatoes, before the work in the orchard is begun. The trees should be absolutely healthy, and if possible these should be from a nearby nursery. I am fortunate enough to have a nursery within a few miles, and the trees never know they are out of the ground from the time they are taken out until they are put in again.

As to the varieties: Only two early varieties pay for me, the Astrachan and the Maiden's Blush, the Maiden's Blush being a fall variety. Neither of them can profitably be barreled, and especially unless you have a nearby market, so that you can take them on spring wagons, it is not wise to use the fall or summer varieties. Of the winter varieties, the Baldwin, in my section of the state, is, par excellence, the apple. I get more money from one Baldwin tree on the par excellence, the apple. I get more money from one Baldwin tree on the average than I do from three trees of any other variety. Next in order come the Spy and the Russet.

Shall we plant in the fall or the spring? I rather prefer fall planting. The ground should be thoroughly tilled before planting, so as to have it very, very fine. In digging the hole for the tree you will throw out cloddy matter, and in filling in around the roots you had best use the very fine earth from the surface, and sprinkle it all about the roots.

As to the laying out of the orchard: I set, the first thing I do, a row of tall stakes, six feet high, two rods apart, all around the orchard. These stakes are planed or white on one side so that they can be seen. We will suppose it is a ten-acre orchard. I begin at this corner, say the s. e., and with a tape line measure just one rod and set a stake, then two rods, two rods, and so forth, coming out one rod from the end. Then at that corner I measure across there one rod from the corner, then two rods, two rods, two rods, and so forth ending up one rod from the corner; then begin at this s. e. corner again and measure westward one rod, then two, two, two, two, and so on across; then begin at this s. w. corner and come across on this (west) side, one rod first, and then two, two, two, and so on. Then I stand at the first stake, we will say at the southeast corner, and sight across to the first stake at the southwest corner, and have two men with stakes about six rods from each, set those two stakes in exact line, then go on to the next and so on; then begin at that n. w. corner and sight across and have two men, one six rods from that (north) side and six rods from this (south) side and set stakes; and when you get through, at any point in that orchard you can stand and sight to two stakes on each side, or to one stake to the right and three stakes to the left, as you will see, also to two stakes forward and two stakes back. Then with a rake handle high enough I sight forward, sideways, backward and to the left and set a litle stake just exactly where the bottom of that rake handle sits. That little stake is at the center of the future hole for the tree. Then I come with a board six inches wide, six feet long, with a two-inch hole bored in the middle at each end, and in the middle at the middle, the middle of it being cut from the edge to the hole like a horseshoe curve. I put that horseshoe curve over the little stake, which stands exactly where the tree is to be, letting it go crosswise of the way I am going to set the trees. Pull that stake and put it in the hole at one end; take another stake from the market basket and put it in the hole at the other end; then lift the board with the two holes and the horseshoe curve in it, dig the hole and go on to the next, leaving those stakes all over the field until you are ready to set the trees. When you set the tree bring that same board along and put it the same way over the two end holes; put the tree into the horseshoe curve and fill around the tree right up into the curve and you have the tree just exactly where it wants to be. And this is the only way to set an orchard so that it will row in ten directions like the spokes of a wheel. It is absolutely correct if you have done your sighting accurately, but you must not do your sighting with one eye—you must sight with both eyes. As I hold this paper and sight with my right it comes exactly at the middle of that door, but if I sight with my left eye it comes away over towards the right of the door. God gave us two eyes so that we might look at both sides of a thing and get the exact point. I discovered, the first time I set trees, that I was getting away off by sighting with only one eye, and I call attention to it here so that you need not go over it again.

The hole should be dug a little below the level of the clay—not much below. On tile-drained ground it does not harm if you dig considerably below. because the water will get away, but if the ground is not tiled—well, do not set an orchard, but if you do, do not dig below the clay hard pan or you will get a mud hole and kill your tree.

I prune the roots carefully for bruised spots before setting the tree. I slant a tree slightly—well, considerably—towards the southwest, for two reasons: First, because the prevailing winds are from the southwest and in three or four years it will straighten the tree up plumb, whereas if you set it plumb the prevailing winds will top it over, and I would rather have a tree lean a little the first five years than the next forty-five years. I always slant a little toward the west. Some neighbors came out to my house this spring, to the Farmers' Club, and they drove right by the thirteen-acre orchard and they said: "Mr. Chamberlain, your trees all lean toward town," and I said: "I set them so on purpose," and explained the reason. In one year they have grown nearly vertical. The second reason for leaning the trees to the southwest at setting is to protect the trunks against sun-scald by the hot 2 p. m. sun until the top grows and spreads and protects it.

In setting the trees, of course, you want to use the greatest care. Thoroughly work the earth all in around the roots. Put the roots out fan-shaped from the center—like the spokes of a wheel—very carefully, and work the very fine earth all around the roots, carefully churning the tree up and down so that there will be no vacant or empty holes. I mound up a little around the tree in the fall and put a wire screen around each tree to protect it against vermin in the winter. I cultivate for five years, if possible, with hoed crops and supply the needed manure to keep the ground rich, and then use clover and mulch three or four years and then plow again. The mulching I consider a very great advantage, but I do not think that with the ordinary orchardists it can be made to take the place of the first five years' cultivation or of an occasional cultivation afterwards.

As to pruning: Never prune to a crotch, nor to a triple crotch; prune to a leader, with smaller laterals out in different directions. If you prune to a crotch it will split down. I had a half dozen trees split down this year. When they come to heavy bearing if you have a crotch or a triple crotch they will split down. You should have a leader and a number of smaller laterals. The pruning should be almost every year, and the trees should be headed at the very first and nearly all extra limbs cut off. Do not cut off too many for the first year. The leaves are the breathing part of the tree and if you cut too close I do not think the tree grows so much the first year.

As soon as the bark begins to peel up rough, when the tree is eight or ten years old, I would scrape off this rough bark with an old hoe, and probably whitewash, unless you sprayed very thoroughly with the Bordeaux mixture the trunk as well as the limbs and leaves of the tree.

During the growth of the young orchard spray at least once each year with the Bordeaux mixture, and when the orchard is grown we spray three or four times each year, first with the Bordeaux mixture before the buds start out, second with the Bordeaux mixture and arsenic in some form after the blossoms have fallen, not before the blossom falls; that is not so good for the spraying and it is worse for the bees; it is apt to kill bees. Spray four times, the third time about fifteen days after the second, and the fourth time about fifteen or twenty days after the third, using Bordeaux mixture and Disparine as an arsenite. Disparine is an arsenate of lead. It sticks better than the ordinary Paris green. I will not further describe the spraying, for every orchardist understands it.

I mulch now my whole orchard carefully with straw or with some crop that grows in the orchard in the cultivation; taking nothing from the orchard now and putting a great deal more on it than I take from it. I shipped nearly five thousand bushels of apples this year, and you will see that although the apples are something like ninety per cent. water, yet something must be supplied to take the place of the fertility that is removed by the sale of so many apples, to say nothing of the growth of the trees; and I manure and mulch pretty carefully. For four or five years now I have been plowing once each year, growing very little in the way of crops, except cow peas or Hungarian grass, or something like that, and using mulch and bringing in large quantities of clean straw and straney manure for the mulch. There is this advantage in mulching with clean straw—that when any apples fall upon the straw they are not bruised and are not dirty and can be sold as "drops." My drops this year sold at thirty-two cents a bushel of fifty pounds in carloads—in bulk; and the picked apples sold at fifty-two cents a bushel in bulk—by the carload. I had nearly ten carloads of apples. In picking I use a dozen or more ladders and stepladders, the stepladders being from six to to nine feet high and the other ladders from twenty to thirty feet in length. The other ladders are pointed—they come to a point at the top. The bottoms of the side railings are V-shaped so as to stab into the ground readily and prevent slipping; the pointed top is to thrust up among the limbs. If the two side bars of the ladder are separate they will catch on the limbs as you push the ladders up, but being pointed they will run up anywhere and they will stand in the crotch of a limb, and the more nearly vertically you stand the ladder, of course, the less pressure there is, and by standing it very straight you can put that point in the crotch of a limb and pick from the very outside of the tree.

The apples are almost all picked from the ladder. I dislike very much to have pickers stand on the limbs, especially with coarse leather shoes. If they must go into the trees, I want rubbers of some kind to prevent the bruising of the limbs, for this causes disease.

I have not spoken of the height at which my trees are headed. I head them at nearly six feet high—five and six feet. The objection of some is that you have to pick all of the apples from ladders; but you do not. The trees "umbrella" down—as I may express it—and at picking time, although the limbs start six feet from the ground at the trunk, all of the limbs bend down and touch the ground and we can pick from the ground nearly one-half of the total, even on those large trees, and with the low stepladder we can pick fully one-half. That is the way the picking begins, pick from the bottom upwards, so that there is no falling off and knocking off of the other apples; as far as possible pick from the ladders and stepladders and not from the inside of the tree, for fear of bruising.

I instruct my men never to drop an apple into the basket; lay it down as you would an egg; the least bruising injures the storage power, the keeping capacity of the apple in cold storage, and makes a dead spot in the use of the apple. Professor Lazenby gave some interesting average figures with regard to the waste of apples, and that average varied greatly, largely because of the difference in the bruising as between the carefully picked apples and the apples bought on the market here and there. Handle like eggs.

We have seven hundred bushels boxes, in which we store a whole carload before we begin to ship. We have a thousand market baskets, which cost twenty-five cents a dozen, and with all of that storage we can store nearly two carloads and put right into the large barn and sort in very wet mornings or on wet days, ready for carring or barreling as the case may be.

Our sorting tables are about fourteen feet long, and thirty-six inches wide. and have a ledge running all around, about four inches high. We put on about six bushels, thin all over the sorting table, and work back the culls and imperfect apples that we are not sorting to firsts and to seconds. and we put all the rest in the basket. Perhaps one per cent. will be culls if the apples are properly picked and properly grown.

When we are done, with a wire shovel, covered with cloths at the edges, we shovel up the culls for cider, handling them with the care even that we do the other apples.

In barreling we select according to the wishes of the shippers. As a rule they say "select a little higher color for the facing," and so we run over the table and take about average size, but a little higher color, if any, than the average. That is their dishonesty, if it is such, not mine. The apples are sold before they are picked, before they are barreled at all, but the shippers insist upon this, that, whereas there shall be no poor apples put in the barrel, the color shall be a little higher at the opening end. In the bottom of the barrel, after the heads are nailed and the top is cleated, we face down with two layers of apples, stem down, and of a little better color, as I have said; then we pour on about a half bushel more and shake down very carefully. We use the market baskets of ordinary shape, market baskets costing two cents apiece, in sorting the apples and in barreling. The market baskets will go clear down into the bottom of the barrel and do away with any bruising. And, by the way, our tables are padded and covered with carpet, so that in pouring upon the table there will be no bruising; they fall gently upon a padded and carpeted surface.

In pouring into the barrels with the baskets we put the basket clear below and empty with the greatest care, so that there shall be no bruising. For every basketful we put in we jostle the barrel very thoroughly, so that all of the apples shall be packed in together and assume the best form possible to occupy the least space possible. Shake each basket until the barrel is full; then fill up about an inch above the chime—the top of the chime—and then press. We have two presses. One you swing an iron bail right over and work the head in and get the hoops down, and the other works with a screw. The first I mentioned is a little the quickest and the one with the screw is a little the most satisfactory. It holds itself right where you want it and it brings the pressure a little more uniformly. I like the screw press a little better than the other, although my foreman—who is a very rapid man—almost always uses the other press because he can put up more barrels with it.

Then drive the hoops down and nail the head and mark the bottom end—the end to be opened—with your own name, I mark mine "W. I. Chamberlain, Hudson, Ohio, Winter Apples," for example, and then I have stencils for all of the different varieties, mainly Baldwin, and then I put an "A" and a "B," if I am sorting for firsts and seconds, otherwise put the "A" on if all are graded as firsts.

I have given the figures, the gross and net receipts on the ten acres of bearing trees, four hundred trees, about one-half of which bear each year. You will notice that for the last three years it is considerably over one hundred and fifty dollars per acre net on the whole ten acres, both the bearing and the non-bearing trees, and you will find that that is a very heavy net income per acre from land that is assessed for taxation at about thirty dollars an acre. (Loud and long continued applause.)

President Houskeeper: We will postpone the discussion of this and Mr. Goddard's paper until later in the Institute if time permits.

We will now have a selection by the quartette, after which we will stand adjourned until two o'clock P. M.

A song, "Dickery, Dickery, Dock," sung by the Williamson Sisters' Quartette. (Applause.)

And thereupon a recess was taken until 2:00 oclock P. M. of same day.

TUESDAY AFTERNOON SESSION,
January 12, 1904.

The State Farmers' Institute met and was called to order at 2:05 P. M. by President Houskeeper, who announced that the first on the program would be music by the quartette.

A song, "The Skipper of Saint Ives," sung by the Williamson Sisters' Quartette. (Applause.)

President Houskeeper: I will announce the appointment of the following committees:

Committee on Nominations: Messrs. E. P. Snyder, M. C. Thomas and S. E. Strode.

Committee on Resolutions: Dr. W. I. Chamberlain, Mr. F. A. Derthick, and Mr. O. E. Bradfute.

The next will be an address, "Associated Dairying," by D. A. Crowner, Secretary-Treasurer of the Ohio Dairymen's Association, West Jefferson.

ASSOCIATED DAIRYING.

Definition:

By associated dairying, we mean that from which the dairy business takes when our dairy farmers associate themselves as patrons of butter factories, cheese factories, milk shipping depots, sanitary milk plants, etc.

These associations appear in various forms, as co-operative, semi-co-operative or proprietary.

It is our desire to call attention to some of the disadvantages and advantages of associated dairying, as opposed to what we might designate as individual dairying. We hope to point out some ways by which the advantages may be increased here in Ohio.

Associated dairying permits of greater concentration in the manufacturing of dairy products, because of this concentration, one man is able to make up the milk of several farms.

This man, it is reasonable to believe, can make himself more expert in his line than one who would take his place on the farm. We would, therefore, expect a better product—more economically manufactured.

The producer, no longer having the care of manufacturing and selling, can study more thoroughly the economic growing of feeds and production of milk, thereby becoming more expert in his line.

The amount of money that would be necessary to build and equip a farm creamery or cheese factory for each of the patrons of a central plant, would build and equip a more perfect central plant. We would expect, therefore, a better apparatus.

It is not unusual for one man to manufacture into cheese or butter in one day 5,000 lbs. of milk. He would, of course, have to devote his whole time to accomplish that work. The farm maker might devote one-half his time in making up the small amount produced on his farm. Another source of economy of labor is seen when the receipts at the central plant exceed the amount that may profitably be handled by one man, as at that time ordinary labor may be employed, as it can be directed by the expert.

It is equally true that less expert labor will be needed on the farm because of the lessening of the work that needs the expert attention. So it is that for the working out of the details, inferior labor may be, to an advantage, hired on the farm.

Because of the business being handled in its various branches, by men who are more nearly specialists and because of better equipment, we may not only expect a better quality, but also a more economic production.

Uniformity of product may be mentioned as an especially great advantage that associated dairying has over individual dairying.

Secretary of Agriculture Wilson, in speaking of the high rank of Danish butter, says: "It is due fully as much to most remarkable uniformity as to superior quality, results from the general adoption of the associated or creamery system of manufacture; and the active aid of the government in criticism, instruction and supervision, amounting almost to control."

Creamery butter and factory cheese, as a commercial article, are far more uniform than country butter and dairy cheese.

One who has not had experience in selling butter or cheese can hardly appreciate the importance of uniformity. It is a fact that when a trade becomes accustomed to a certain brand of butter or cheese, it will not be satisfied with a different brand, though it may be slightly better in some very important particulars.

When one considers what a time a commission merchant would have in teaching fifty (50) farmers' wives how to make a certain brand of butter or cheese, with a specific color, salted just so, packed in a uniform package, etc., etc., one begins to understand why the commission merchant had rather buy the product of these fifty (50) dairies made up at a central plant.

Because of this concentration of a large output, sales and collections may be prosecuted more cheaply and, on an average, a better price may be obtained for large shipments than for small lots. So it is that the better price which creamery butter usually brings is not only because of a better average quality, but, also, because of a greater uniformity and larger sales.

Among the disadvantages of associated dairying, we would name, first: The lack of individual responsibility. When our butter and cheese were made on the farm, the cows fed by the same person who did the milking and the manufacturing, there was only one person to receive the honor and the responsibility. What a difference in the associated system. The fault may lie at the door of any one of the fifty (50) patrons or the buttermaker, if the product be inferior. Each would have a share in the honor, if the product be perfect.

Although inconsistent, what a different condition of affairs there would be if each patron's milk could be made up separately at the factory. What a time the buttermaker and commission merchant would have! The troubles associated with low tests would be no comparison, but, as the Babcock Test brings a gradual but sure improvement in the richness of the milk, so this system would bring improvement in the care of the milk before it reached the factory.

Probably, from the point of immediate returns, the expense of getting the milk to the factory is the greatest disadvantage of the centralized plant. Often, this expense exceeds all the other expense connected with the manufacturing and selling.

Advantages:
- Concentration,
- Better Labor,
- Better Apparatus,
- Farm Creamery,
- Economical of Labor,
- Cheap Labor.

Uniformity of Products:
- Economical of Sales and Collections,
- Larger Sales.
- Better Average Price,
- Increased Production,
- Because of the Above.

Disadvantages:
- Lack of Individual Responsibility,
- Quality,
- Amount,
- Decreased Value of By-Product,
- Great Cost of Getting Milk to Factory.

In suggesting improvements, we will begin at the factory end. Better kept factories and surroundings will place the business several degrees higher in the estimation of the more enlightened public. A factory should be such that it will be a source of pride to the community, not a disgrace to it. A nicely kept factory is a wonderful stimulus to the careless producer to be more careful and to take more pride in his work.

Among the disadvantages was mentioned the depreciation of the by-products. Such a depreciation is unnecessary, as it may usually be prevented by pasteurization and thoroughly cleansing the skim milk and whey tanks.

The factory is a social as well as an educational center of its community. It is here that the farmers meet. It is here that they swap ideas and social greetings. By an intelligent direction, these daily meetings can be made wonderfully productive of good for the dissemination of healthy knowledge.

Hon. James Wilson, Secretary of Agriculture, has named, as a prominent cause for the high repute of the Danish dairy products, the rigid inspection by the Government and its system of scoring dairy products. Some of our sister dairy states have dairy inspectors, or, as they are called, traveling instructors. Such states as Wisconsin and Minnesota have made rapid advances in both quantity and quality of the dairy products.

The system of traveling dairy instructors has been so thoroughly productive of good in this country, Canada and Europe, that it can be looked upon as having passed its experimental stage. If Ohio is to hold her own, she must adopt a similar plan by which our sister dairy states have made such rapid advances. It surely is high time that Ohio should have in the field an efficient corps of traveling dairy instructors, whose qualifications would be such that they could give instruction to the creamery operators as well as to the patrons.

Their duties should be to visit the factories with the view of inspecting and instructing. The law should be framed in such a way that their appointment could not be used for political influence. Let us hope that our present Legislature will see the way clear to provide for such an urgent need.

If, along with the traveling instructors, we could provide for a monthly or bi-monthly system for scoring the products of the various creameries and cheese factories, we would have a system that would in a short time roll thousands of dollars into the coffers of dairy farmers and dairy manufacturers.

If it were possible to so place our factories that the milk receipts would be larger, the cost of manufacturing would be considerably lessened and a more uniform product might be expected.

No business that is so dependent upon a single raw product as is associated dairying can expect to reach its highest success when the payment for that raw product does not take into consideration its quality. Could there be any more inconsistent business principle than one that says a raw product that contains three per cent. of the desired material is as valuable as one that contains six per cent. Yet this is the fundamental principle of the pooling of milk for butter or cheese making as opposed to paying by the Babcock Test.

In this connection, I would call your attention to the conclusion of our most careful experimenters, that whether the milk is to be manufactured into butter or cheese, its fat contents is the only practical index of its value.

Combine payments for the milk according to fat content, with a scale of prices based on actual sales, and we have a strong system as a basis for the development of the dairy business. With that combination, the producer is interested in producing not only a product that will pass the nose of the milk weigher, but also a milk that is clean and will, when manufactured into butter or cheese, bring the highest market price.

With such a system, one might expect a more thorough co-operation between manufacturer and producer, which will increase interest in business and probably bring more business.

No factoryman can expect to have anything like co-operation from his patrons unless there is some dairy knowledge among the patrons. It is much more pleasant to the person who wishes to be fair, to have patrons who have, at least, enough knowledge of the business, that they will positively know that they are being used honestly.

If there is any business in which honesty is necessary for its successful promotion, it is in assocated dairying. It is not only necessary to be honest, but you must make the other fellow know that you are honest. An intelligent producer will be satisfied with nothing less, but will be satisfied with that.

In many of the dairy sections of the state the roads are so poor that they become, at certain seasons of the year, almost impassable. Such conditions are a great hindrance to associated dairying.

Every farmer and every factoryman should be an enthusiastic "good roadsman."

The dairy business in Ohio could be helped considerably if proper legislation could be had to encourage the production of high class dairy products and to further discourage the production of second class products.

Usually, all that is necessary to discourage the manufacture of a poor article is to compel it to be sold on its own merits. Well enforced branding laws will usually be sufficient for state products.

As has been previously suggested in this paper, a law providing for competent traveling instructors would be a step in the right direction if she expects to hold her own in the dairy business.

By far the greatest improvement of a dairy business is to be in the production of milk rather than in the manufacturing. The cost of manufacturing may be reduced slightly, but the average cost of production can easily be reduced one-half.

Here, let us quote from Ex-Gov. W. D. Hoard's article, "The Patron and the the Creamery," found in that most excellent book for the dairymen, "The Creamery Patrons' Hand Book:"

"The real and the most serious expense lies at the farm end in producing the milk and getting it to the creamery. There seems to be a most serious lack of knowledge and study concerning the right kind of cows that shall produce milk in sufficient abundance to make the cost low per cow; concerning the right methods of field and stable management so that the cow can do her best, concerning farm management in producing the right crops and so handling them that they shall stimulate milk secretion to the largest advantage; concerning the science of feeding, how to compound a ration that is adapted to milk produtcion. All these points require reading and study. Every creamery should be a dairy school, where the patrons may take advantage of their co-operation together to increase their knowledge."

He continues with an illustration taken from the "Hoard's" creameries at Fort Atkinson, Wisconsin:

"To one patron, who has a herd of 19 cows, was paid $65 per cow for the year for the cream in his milk, the skim milk being returned to him. The cost of keeping was $35 per cow. This left him a net profit of $30 per cow. To another patron in the same creamery was paid $35 per cow. He received $5 per cow profit. The first patron received 600 per cent. more net profit than the second man. The milk of both was taken to the Babcock Test and the butter of both sold at the same price. This tremendous difference in profits lay at the farm end of the business and not at the creamery. The first patron was a reading, thinking man, who kept his mind at constant study on all the points we have mentioned. The second patron did not believe in such things and he lost $25 per cow for his way of thinking."

In one test made at the Kansas experiment station, the cost of feed to produce one pound of butter fat in their herd of 12 cows ranged between 19.7c and 8.5c. In other words, their best cow produced butter fat at a feed cost of 11.2c less than the poorest cow. Their poorest cow produced 135.7 lbs. of butter fat in one period of lactation—their best cow produced 383.7 lbs. If the milk produced by their poorest cow were manufactured and sold, free of cost, the net gain would not equal that of the best cow when paying the full amount of manufacturing and selling.

We have taken time to illustrate this fully, as there is a feeling that the great expense to get rid of is at the manufacturing and selling end of the business. Per pound of butter fat this is about 4c. We have shown that this expense is not near equal per pound to the difference between the cost of production of different individuals or of different herds.

A greater concentration of the business is conducive to lowering the expenses, especially the expense connected with the hauling. This hauling expense may also be reduced by the farmers clubbing togther so that one may haul the neighborhood's milk a week at a time. In creamery sections it may be further reduced by the introduction of the farm separator system.

Better care of the milk than is generally given it, would insure a better product and better prices.

To recapitulate—our suggestions as to improvements have been as follows:

Improvements:

At Factory—

More care with factory and surroundings.
More care with by-products.
Make factory a social and educational center.
More thorough and rigid inspection by state.
Traveling instructors and frequent scoring of product.
General introduction of Babcock Test.
Babcock Test.

Cheese Factories and Creameries—
- Govern price of milk by actual result of sales.
- More thorough co-operation between manufacturer and producer.
- Better roads.
- Legislation.

At Farm—
- Better cows.
- Better housed.
- Better fed.
- Larger herds.
- Reduced hauling expense.
- Better care of milk.

(Applause.)

President Houskeeper: We will allow just a few minutes to discuss this paper if any one chooses, and if not we will pass to the next number, "Home Making as a Fine Art," by Mrs. J. W. Bates, Broad Ripple, Indiana.

HOME MAKING AS A FINE ART.

Mr. Chairman, Ladies and Gentlemen:

I am glad to bring greeting from the many thousand home makers of Indiana to this, the representative, body of the auxiliary home makers of Ohio. To many when fine art is mentioned their minds may go to a Raphael, Landseer or Rembrandt, whose faithful brush and accurate eye has portrayed to canvas the beast of the field, the rippling wave, the setting sun, the fleecy cloud, or the infant Jesus, or, there may be memories of a Mozart, Strauss, Beethoven or Wagner, whose musical compositions have charmed your ear and soul with a march, waltz, sonata or opera. There may come to some the music of the human voice, whose magical tones have carried you to other worlds than this with the art of oratory. But the home maker, with her preserved fruit, her golden butter or yellow cheese, paints a picture of brighter hue than an artist brush can portray, and the shouts and laughter of her children's voices are far sweeter than the magical tones of the water or tones of the harp.

In the primitive days two of the chief aims worked for by the home maker were to prepare sufficient food for the family, and clothing to protect them from the inclement weather. They also helped to card the wool, scotch the flax, and weave the garments, and knitted the hosiery, also; and washing, ironing, patching, darning, sweeping and cleaning were side issues to be done at odd times. But these days and all primitive days of our ancestors are fast being relegated to the past, and put in museums and books of ancient history. In the twentieth century home, no longer does the home maker trust to luck, the crispness of the crust, the color and grain of the butter, or the juiciness of the meat; nor are the sanitary conditions trusted to the pickle jar. The home maker's brain should be educated equal to her brawn, if not more so, according to her strength, for in some instances she stands equal with her brother today, intellectually.

The skilled home maker with her magical tools of flour, butter, meats and vegetables, stands equally with the skilled mechanic, with his saw and nails and lumber, and why not? Does it not depend upon her if her child shall be tainted with an inherited disease, or malformed from non-nutrition. The child depends upon its mother for sustenance from nine to fifteen months, and innumerable troubles may arise by ignorance of proper foods through that period. A great number of children's intestinal diseases are caused by unsanitary conditions and improper food; fissures of the skull, enlarged glands, malformed joints, cholera infantum, early decayed teeth, pallid cheeks, pale lips and flesh of a glistening appearance, tightly drawn over the little skeleton, only tell the story too well that the little body had not received some element to balance the delicate machinery. The authors of a great many of our serious crimes and inmates of our jails and almhouses have been committed by an abnormal appetite formed by an insufficiency of something they did not receive while maturing.

For several years I have attended Farmers' Institutes, and have associated with some of our best agricultural students, who have presented charts of food rations for the swine, horse and cow; some show their experience with certain foods to produce the largest number of pounds of beef in the least time; others, experience show the kinds of food for the dairy animal to produce the largest yield of milk and largest per cent. of butter fat, but I have yet to find a practical food chart that will give a home maker an idea how to feed the growing child to produce the best in him, physically and mentally.

Foods:

Foods are divided into three classes: Proteids, carbohydrates and mineral matter. Protein, or albumen, is the first food value, and is one of the principal foods needed in childhood. It is principally found in lean of meat, fish, eggs, casien of milk and cheese. Starches, sugar and cellulose form the bulk of the carbohydrates, which include in a great measure wheat, corn, rye, rice and potatoes. Peas, beans and lentils, although usually classed among the vegetables, really form a distinct class to themselves. They contain a strong per cent. of mineral matter and protein. Fruits constitute a great part of the food on the American table. The mineral qualities help to build up bone and muscle and blood cells, while the juice contains about nine-tenths water, and acts as a solvent to wash out impurities in the system whenever found. Fruits form a perfect carbonaceous food and with the addition of the proper nitrogenous matter constitute an ideal dietary. Fats form fatty tissue, and are found in fat of meat, butter, olive oil, and oils of corn and wheat. As the body is constantly wearing and throwing off energy and heat, our diet necessarily regulates the machine, and for the maintenance of health the food must contain these elements in proportion, for deficiency of any one of them will in time result in disease.

Preparations of Foods:

The preparation of food is an art alone, both from an economical and scientific point of view. It is a worthy knowledge for the home maker to know how to cook a roast or to broil a steak so as to gain 189 grains of nitrogen from one pound of lean beef. It is an item of intense importance to know when the body needs the use of more nitrogenous matter. The man who works in the field, who uses his brawn more than his brain in cold winter days, is the one who uses the most pork, as it contains 20 per cent. more nitrogen than beef, per pound, but beef is easier digested, is better for students, growing children and persons with weak digestive organs.

A good cut of beef should be a deep red, firm under the finger, with a layer of white fat around it. Pork chops, mutton chops, veal cutlets, and tenderloin steaks come along the backbone. To broil a steak, the spittle should be smoking hot, without any grease in it. Throw the steak in and sear on both sides, so as to hold all the juices of the meat in. Do not pound or chop it, as it will allow the juices to escape. When the desired amount is cooked place in a hot platter, pepper, salt and butter to taste. Pork chops, veal cutlets and mutton chops are very nice fried in deep fat, after being breaded with cracker and egg.

Never use cold water unless you wish to make soup, then have the bones well broken, and salt and a slow fire will draw out all the juices. Salt draws out the juices and hardens the fibres, so do not use until within twenty minutes of serving a roast or stew. Eggs are an abused food for digestibility—fried hard in hog fat, or baked hard in custard, renders them unpalatable, but soft boiled they constitute food. The egg includes as perfect a food as we have.

Sanitary conditions:

A first-class cut from a steak and the delicate flavor of the butter and milk will become tainted if the refrigerator is not kept in a sanitary condition; spoiled, decaying vegetation, onions, carrots, cabbage or canned fruit will cause the milk and butter to become tainted if left in the same room any length of time. Any of these causes named, if left in a damp cellar, will breed disease germs, and cause illness in the family. Several cases of diptheria have been traced to a foul, damp cellar full of half decayed vegetation, where the germs find luxuriant quarters to thrive and multiply. Typhoid is sometimes carried by flies, but the larger number of cases is caused by drinking water. Disused wells, shallow dug wells, shallow springs, and poor drainage are the homes of typhoid germs. All wells should be driven through limestone rock, or, if the well is a dug one, elevate the curbing so all waste water will flow away from it, and none of the surface water into the well. Water from a spring from the mountains or from a well from a depth of 150 to 200 feet deep, or a filtered cistern, is considered pure.

Arrangements of work:

Home making can not be an art if there is no systematic arrangement of the utensils of work in the kitchen. Not that any certain laws and rules can be put down for any home maker to follow, as each home and home maker has her peculiar individuality and imprints of personality. But it is the right of the home maker to have a first class range, plenty of fresh air and sunlight, and plenty of the utensils known to the culinary department. If the kitchen will permit in size, the work table should be placed in the center of the room. The covering of the floor should be one that is easily cleansed, and pleasing to the eye. It's every home maker's duty to save as many steps as she can while at her work. Sometimes, if a little thought is given before preparing a meal, one trip to the cellar will bring all the vegetables that will be needed, or once going to the dairy building all the butter and cream can be brought. Again, if the meal is thought of before preparing, other things can be prepared for the evening tea. On wash and iron days, while the range is hot, a pot of beans, roast, meat pie or apples can be put in the oven and cooked while the washing and ironing is being done. Economy of time and of strength means economy of health. It's a poor excuse to try and do all of one week's work in one day, and suffer with excruciating pains as a reward. Home makers must learn to make their work a finished product; they must plan and execute their work with as little waste of energy and time as possible. It's her duty to take a stroll in the evening as a relaxation to the nerves, and strengthen them with communion with nature's tonic, fresh air and pure sunshine.

Character building:

The home maker needs to build her home not only with things that are a pleasure and blessing materially, but of such that her children will rise and call her blessed. For characters that are trained by a loving, tender, devoted mother, whose aim and object is to mould her children to be strong, wise and pure, and to be fit jewels to be set in the King's crown, are the backbone and energy of our nation, the brain and sinew of our farms, the strength and valor of our armies, and the mothers of our future statesmen; the thoughts of such homes have proven a seven-fold shield to virtue, and the character of it to call the wanderer from vice.

The maker of such homes is a queen in her rights, her children her subjects, her husband her counsellor at all times, her palace her home circle, and her scepter of government is love. And love is the unseen guest and unseen host at the marriage feast and lives in a rich temple hung with gems that never dazzle, but breathe a benediction when entered.

Bonaparte says he thinks "the entire good or evil of a child entirely depends upon the mother."

And to these home makers, these mothers who hold the balance of justice in their hands, who balance the physical, the moral and the spiritual of these children, are the uncrowned queens of America, and they are the ones who make home making a fine art.

(Loud and long continued applause.)

President Houskeeper: Surely we have all appreciated and enjoyed this grand address. The discussion of the subject will now be opened by Miss Minnie A. Stoner, Ohio State University, of this city.

Miss Minnie A. Stoner: On account of a break in the viaduct trolley wires I have only just arrived, too late to hear the address, and consequently I am not prepared to discuss it.

Mrs. Mary E. Lee, New Plymouth, Ohio: It is too bad to let such an excellent paper go without some discussion.

The lady has certainly treated us to a most excellent, practical and scientific talk, and it is really too bad for us to let it pass, and I am tempted to talk just a few minutes on the matter.

She has insisted upon the need of better sanitary conditions in the home. Aristotle said once that the care of the body preceded the care of the soul; that everything depended upon a strong, healthy body for a strong, healthy, well-balanced mind, and Mrs. Bates in her address has given hints along the line of keeping the body strong. When she spoke of the care of the child, the need of the child, the necessity of giving the child good, well-balanced food, she touches at the very root of the matter.

It has always seemed to me a rather strange condition that we take so much pride in apprehending and convicting and executing the man who has taken the life of his fellow man; we feel that we have done society a great good in doing that; we feel that we have removed from society one who would probably visit a great deal of curse upon it, but if you stop to think there is a far greater curse placed upon society and far more suffering results from neglect of scientific laws and scientific interpretation of the laws. We do not think anything of spending a thousand or fifteen hundred dollars to convict a criminal, yet we are very, very slow about spending any money to send our children to domestic science schools or in the buying of books that will aid them to help themselves; and I want that one point insisted upon most strongly—that it is much the result of a lack of knowledge of scientific laws. It has been said that most of our disease—more than half of the disease from which we suffer—is simply from pure ignorance of nature's laws. And certainly if we want to secure happiness—which is the prime aim of all our lives—and if we want to be able to do the very best work that our bodies are capable of doing, we want to learn as much as we can of these scientific laws. (Applause).

Hon. Reuben Rankin, of Fayette County: I would not for a moment think I was capable of discussing the merits of the paper, but from my standpoint I feel the truthfulness of every line and syllable of it. However, one discouraging feature is that so few of our ladies are here to hear such valuable papers; and I just wondered if the fathers and brothers who are here today are responsible for the absence of the ladies. (Laughter.)

I do not know that I feel like entirely exonerating the ladies from the fault of not being here, because I remember in the work of a committee in preparing a program for a Farmers' Institute, we have very great difficulty in getting the ladies to take any part. Of course we do not expect the ladies to come and very much enjoy what the men say at Farmers' Institutes, and it remains for these committees in preparing programs for institutes to labor harder and get such material for papers on these subjects as we have had here this afternoon.

I remember and shall carry home and tell my women folks some of the things said here, yet I think the admonition to be taken home today is that we, who take the lead in these Institutes, should push the ladies forward more in this direction. Why, what could be more valuable than that suggested in the paper, in preparing food for the children that are growing up around us? Those who are engaged in the practice of preparing a balanced ration for an animal must take admonition in that direction and encourage the ladies to come forward; if they were encouraged they would come forward in many cases, and if they were even invited to come forward they would come.

These are, I think, valuable suggestions and we should work in line to put them in practice.

Mr. J. S. Wiley: I wish that that address could be studied in every female seminary in the land. Why? Because there is extant an idea that our cultured ladies, our refined ladies, should stay outside this kind of work; this paper shows its dignity, its moral character. There is too great a tendency to depend upon "biddy" alone, as if it were something degrading to understand and attend to this business. I believe that every gentleman present would be glad, and I congratulate the man who is fortunate enough to have a lady who can prepare meals and such papers as we have heard today. (Applause.)

Mr. W. A. Eudaly, of Hamilton County: I am one of those who can say, "I am very glad to have heard this paper," and I will guarantee you, sir, that our wives at home will hear of this. (Laughter.)

I am going to tell my wife when I get home that I have learned that the beef steak requires a plunge bath just the same as the boy (laughter) and if my wife doesn't give the steak a plunge bath hereafter there will be a row.

I am delighted with this paper. It is magnificent. Why, it has taught me more about raising children than I ever knew—I never raised any. (Laughter.) I am not saying this in jest; I like very much the remarks of the lady.

You men ought to remember hereafter when you are sent to market to get a beef steak, that you must have some gumption as to the particular cut, for I warn you, as the lady has informed us, that if you do not get the right cut, no matter how many plunges you give it, it won't be good and tender. (Applause).

A member: The ladies can be interested if the State Institute will adopt the policy which a local institute has adopted. We give the ladies one session and it is officered by the ladies and conducted by the ladies. They generally take a night session and the one session is devoted to the ladies alone.

Mrs. J. W. Bates: I want to make just a remark, in reference to those made by the lady. Everything she said was just all O. K.

She spoke about the criminal classes, and I wondered if she knew that at one of our eastern institutions, when some of our scientific medical men were studying the criminals that were brought there, and discussing the fact that a great many of the authors of our crimes and a number of our inmates of jails, penitentiaries, almshouses, county infirmaries, poor farms and all of those institutions were caused by an insufficient amount of certain elements of food in their growing childhood.

No doubt there are a number of men here who have made a careful study of the balanced food ration of your swine. Sometime or other you have given your swine the choicest food known to hogdom and yet that very hog would leave that forage you had prepared for him, or that bushel of corn, and would go and root up a lot of soil for a certain food. He will bring that up and eat it. He is satisfied. His nature is such that it tells him what he needs; he has found it and with your food it balances his ration. The growing child can only rebel by having the diseases which I have mentioned to you. (Applause.)

Hon. A. H. Judy, Representative from Darke County: I want to say to you that there are more women in the state of Ohio who are familiar with these different things than we are giving credit, and these women are practicing them in our Ohio homes today. These things should be defended and they should be taught to our girls and we are having them advocated right along to our girls of twelve and thirteen years who are coming on to take up the cares of their mothers, and I do not believe that the women of Ohio are as ignorant on these subjects as the men suppose they are. (Applause.)

And it is my honest opinion that if we will give to the women of Ohio the proper attention and the proper opportunities and furnish them the proper beef steak and the proper crops, they will prepare as scientific and as healthful food as the average of the United States, and much above the average of today. I am confident of this fact; it has been a neighborhood talk in the communnity in which I live, and I am only a sample of the state of Ohio, and our neighborhood is only a sample of it as to these things. It is discussed by the women how to prepare these things and to meet these changes which have come about; how to prevent these diseases and how to best take care of them after they have made their appearance, and in our experience in keeping house, for twenty years we have never spent a night up with a sick child. We have had typhoid fever which the child contracted up in Cincinnati and brought out to our country home; still we have never had a victim from it, and we have gotten along very nicely.

In our country I think they are pushing right along on this line, and while I agree with everything that has been said and everything that has been done, yet I can not agree that they are as ignorant as some of us seem to think. Let us go ahead now and furnish these things to our wives and I guarantee that they have the intelligence to carry out these ideas. (Applause.)

Mrs. Mary E. Lee: There has been something said about the ladies not being here and about there not being more women on the program in the past years. I am quite well aware of the fact and I think every worker in agricultural fields knows that our secretary has given every opportunity for ladies to be on the program and he has urged it and urged them, and he certainly has done his very best in giving us the splendid one he has, and I do hope that out of this discussion will arise a desire from more of the friends who are here to bring their wives and daughters next year, because they may rest assured that Secretary Miller is doing everything he can to forward the work that is being done today. (Applause.)

A member: At a meeting of this character once after the ladies had spoken, there was no discussion, and some gentleman in speaking of it afterwards said, "Why was there no discussion?" and some one replied, "Why, the gentlemen knew better than to talk." We have had a happy discussion. (Laughter.)

President Houskeeper: We will have to close this discussion, unless it is the wish of Miss Stoner to say a few words.

Miss Minnie A. Stoner: In regard to what is being done in the state of Ohio, I might say the Federation of Woman's Clubs has a Domestic Science Committee. This committee has in the past done a great deal of work in the line of investigation with reference to educational affairs and it has endeavored to make the work of high standard. Through its influence and its endeavor to create public sentiment it has worked to have such departments placed in the public schools of the various cities and towns.

The various clubs over the state have home departments. In these departments subjects pertaining to domestic science and home economics are discussed. So that the women in the state of Ohio are pretty well informed in regard to the educational value and importance of domestic science. (Applause.)

President Houskeeper: I hope that next year there will be a large increase in the attendance of farmers' wives and daughters at our annual Institute.

We will now be favored with a selection by the quartette.

A song, "Mammy's Lullaby," sung by The Williamson Sisters' Quartette. (Applause, long continued.)

Encore, a song, "Two Flies," sung by the quartette. (Loud applause.)

President Houskeeper: The next numbber on the program will be "Certain Ohio Soil Problems," by Professor A. D. Selby, Botanist the Ohio Agricultural Experiment Station, Wooster, Ohio.

CERTAIN OHIO SOIL PROBLEMS.

Soil problems are numerous and exceedingly intricate; their final solution cannot be quickly and correctly stated. As a result of the labors of ten years by the chemists and assistant chemists of the Ohio Station, I am bringing to you today the results of chemical and mechanical analyses of certain Ohio soils and hope to point out the particular problems contemplated in the title just given.

By way of introduction it may be permissible to state that there is too much accumulated evidence as to the essential correctness of recent chemical teaching and experimentation with fertilizers, to be brushed aside without careful weighing of results. I have no desire to do otherwise than weigh the evidence and convey the suggestions which appear to arise from the results. If these suggestions increase our appreciation of the extreme complexity of these soil problems it is fair to assume that none will be greatly surprised.

Mutual Relations of the Soil and the Plant Nourished by It.

We will first take up the general relations of the soil to plant life and growth. Our higher seed plants consist of the parts known as root, stem, leaves, flowers and fruit. The root is distributed in the soil or outer layer of the earth and fixes the plant more or less firmly therein, while the stem and the organs borne by it, as leaves and flowers, are left in the air which surrounds the earth. Aside from serving as the medium of attachment for the plant by the root, the soil serves as practically the only carrier or source of available water and dissolved plant food for our ordinary crops. The exceptions to this are of so slight weight that they may be generally disregarded. Clover plants may appear as such, yet the soil is still the medium to nourish the microbes as well as the source of the chemical substances aside from atmospheric nitrogen.

Upon the moisture side of this question, the water of showers and of dew upon the leaves play a very small part in the plant's supply; while the moisture upon the leaf surface may aid to maintain the turgor of the plant and prevent its collapse by wilting, the period during which such moist surfaces may exist is comparatively brief in contrast to the entire period of growth.

We may repeat then, that the chief function of the root is to absorb soil water containing the solid materials dissolved in this water; furthermore that the actual water absorption is practically all by the root tips with their root hairs; that is, this water must be taken up by the new parts of the roots. Through these parts we have the single and only avenue by which our cultivated plants obtain any appreciable amount of plant food from the soil. The soil water is not only a plant food in itself, but it is the medium through which the mineral plant foods enter the plant; there is no exception to this in the case of nitrogen, for the nitrogenous compounds which supply plant food are the nitrates. That is, they are of the inorganic or mineral category. In a great measure then the water question or water factor is one equally affecting both soil and plant problems.

The great importance of the water supply for plant growth in our latitudes may well inspire astonishment; but this should not lead us to forget the fact that other substances and other compounds than water are essential to plant growth. I would not be one to detract from the importance of the water relations of the soil, neither am I prepared to admit that it is the only problem. It is not saying too much to suggest that one-sided judgments are as dangerous here as in any other field. Not the water relations alone, but all the relations of soils or of a given soil must be kept in mind at this stage of the discussion.

I have sometimes felt that the concentration of attention upon the nitrogen, phosphoric acid and potash which we obtain singly, in twos or all together in fertilizers, may lead some to feel that plants utilize only these elements; no greater mistake could easily be made. Plants require not only phosphorus, potassium and nitrogen, but equally sulfur, iron, calcium and magnesium in the available soluble compounds of each; the oxygen and hydrogen of water, utilized as water, must also be included in the list of esential elements for plant growth. It is the relatively rapid exhaustion of these three substances, namely, potash, phosphoric acid and nitrogen, above the others, or conversely the relatively greater profits from their application upon soils, that fixes attention upon them in both our general and special discussions.

In the utilization of the soil moisture, the plant must receive it containing the various compounds dissolved in the water as a result of soil percolation; it does not follow that all of these are esential and useful because found in the soil. Now if you who have read of the alkali regions will recall that injurious substances or even those poisonous to plants may be dissolved as is true in the alkali lands, you will have the reverse picture; in some instances it seems to be a matter of the concentration of the solution as well as the character of the mineral salt.

Even with us our soils all contain considerable amounts of soda; the actual percentages approximate, or even exceed, in our Ohio analyses, those of the closely allied but essential potash. And while most plants make little use of silicon, the insoluble portions of our soils which are almost entirely of silica or silicates, compounds of silicon with oxygen and with gases, testify to the great excess of these comparatively inert substances. We must recognize essential and non-essential constituents, using this term with reserve.

Whatever the soil presents in the forms dissolved in the soil water, if within the limits which work no injury to the root tips, will be absorbed by the roots. It is not clear that the plants possess in the roots the power to absorb one soluble substance and reject another; rather the plant may control the amount of this total absorption as such, toxic compounds may cause absorption to cease or serve to reduce it.

Absorption of Water Influenced by Transpiration.

To a certain extent the absorbed water passes from one cell to another by osmosis; by far the more rapid and larger transfer takes place as a result of water loss through the leaves by transpiration.

The transpiration is controlled by the leaves through the mechanism of the stomates. Without going into details now, as I have already done that in a paper recently published, * it will suffice to state that the transpiration water stream varies with the dryness and temperature of the air; so long as the soil and roots continue to supply the water called for by the leaves, this stream continues. When the soil supply is reduced both roots and leaves adapt themselves to this diminished supply. It may be impressed upon us at this point, that as the transpiration stream and the root absorption increase or diminish, in like measure, the mineral food supply is increased or diminished. Assuming then that this food supply is beneficial, conditions of soil, etc., favoring a sufficient water supply in the soil will favor plant growth.

Physical Character of the Soil as Affecting the Water Supply.

It is in relation to the physical character of soils that they have been given descriptive names; yellow sand, black sand, sandy soil, sandy loam, loam, clay loam, clay soils, all attest this fact. "Limestone soils" is a term sometimes heard, but may be quite as often applied with its physical character in mind as with its chemical composition. Mechanical analyses of soils, or the determination of the size and constitution of the soil particles, is practiced with the aim to secure data upon this point.

TABLE I. Mechanical analyses of Ohio soils give the results we have secured in this line. Broadly speaking, this process of mechanical separation divides the soil into sand, silt, clay and organic matter. The sand is separated as fine gravel, coarse sand, medium sand, fine sand, and very fine sand according to the diameter of the particles of sand; the silt is divided into silt and fine silt; the fine silt approaches very closely to the clay in physical character. The loss on ignition represents the vegetable tissue or humus in the soil, but is increased by possible breaking up of carbonates and the release of the carbon dioxid in them.

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*"The Water Factor in Plant Growth—Its Bearing Upon Plant Culture," read before the Ohio State Horticultural Society at Delaware, O., Dec. 11, 1903. Printed in "Ohio Farmer," of Dec. 26, 1903.

TABLE I—MECHANICAL ANALYSES OF OHIO SOILS.

Soils—First six inches.	No. Analyses.	Fine gravel. (2—1 mln.)	Coarse sand. (1—5 mln.)	Medium sand. (5—25 mln.)	Fine sand. (25—1 mln.)	Very fine sand. (1—05 mln.)	Total sand.	Silt. (.05—.001 mln.)	Fine silt. (.001—.005 mln.)	Clay. (.005—.0001 mln.)	Total mineral matter.	Loss or ignition.	Total.
Wooster—													
East Farm	18	.73	1.02	.86	1.95	21.01	25.48	25.40	40.37	4.65	96.30	3.60	99.90
South Farm	4	.58	1.02	.74	1.43	17.23	21.04	28.18	42.23	4.30	95.75	4.25	100.00
Average	22	.70	1.02	.84	1.77	20.83	23.75	25.90	40.69	4.58	96.20	3.66	99.91
Strongsville	18	1.76	2.43	2.36	5.29	10.26	20.96	27.52	35.28	7.76	93.90	6.61	100.51
Columbus	2	.83	2.10	2.71	7.79	17.78	31.23	28.32	28.25	6.12	94.92	4.69	99.61
Neapolis—													
Yellow sand	3	.19	1.04	3.40	37.92	46.75	89.25	2.61	3.44	2.51	97.78	2.46	100.24
Black sand	2	.02	.82	2.84	31.90	52.21	87.82	2.22	2.83	1.23	94.07	5.57	99.64
Germantown	1	1.04	1.92	1.95	4.33	9.09	18.36	55.21	17.72	8.89	95.18	4.51	99.69
Carpenter	2	.52	1.79	1.55	2.32	4.76	10.94	47.41	26.01	9.71	94.38	6.01	100.08
Subsoil—Second six inches.													
Wooster—													
East Farm	18	1.06	1.14	1.03	2.02	19.08	24.37	26.61	38.69	6.64	96.27	3.13	99.40
South Farm	4	.40	.70	.70	1.34	18.82	21.98	29.98	36.90	7.45	96.70	3.01	99.71
Average	22	.94	1.07	.96	1.87	19.01	23.94	27.19	38.32	6.78	96.84	3.10	99.94
Strongsville	18	1.00	1.50	1.87	4.50	8.19	17.56	28.95	34.05	15.80	96.34	3.98	100.32
Columbus	2	.65	2.00	2.60	8.09	17.69	30.93	27.34	28.60	7.43	94.45	4.37	98.82
Neapolis—													
Yellow san	3	.46	1.34	3.03	33.11	52.63	90.44	2.42	2.78	2.41	98.08	1.19	99.27
Black sand	2	.04	.77	2.57	32.62	52.47	88.06	3.49	2.78	2.09	96.72	3.20	99.92
Germantown	......	......	......	......	......	......	......	......	......	......	......	......	......
Carpenter	......	......	......	......	......	......	......	......	......	......	......	......	......

Turning our attention to the results we find the soil, or first six inches of the Station Farm at Wooster, contains 23.75% of sand; 66.8% of silt and 4.6% of clay and may be called the Wayne silt loam, having in mind the but slightly changed character of the subsoil with less than 7% of clay.

The soil of the Strongsville test farm, located at Strongsville, Cuyahoga county, contains 20.96% sand, 62.8% silt, and 7.76% clay, and nearly double the loss on ignition found at Wooster, or 6.61%; I propose for this soil the name of "Cuyahoga silt clay," having in mind the subsoil characters and actual behavior.

The plots at the Ohio State University, Columbus, give sand 31.2%, silt 56.87%, and clay 6.12% and moderate loss on ignition. This is a loam or silt loam.

At Neapolis, Fulton county, upon the former test farm at that point, there is about 88.5% sand only 6% silt and about 2% clay—a veritable sandy soil. It is by origin a beach sand of the old westward extension of the present Lake Erie.

The test farm at Germantown, Montgomery county, has a soil much like that of Strongsville with 18% sand, 73% silt and 9% clay; while the proposed test farm at Carpenter, Meigs county, upon the plateau portions, where the soil is derived from underlying shales, has a soil slightly different in mechanical composition from those of Strongsvillle and Germantown, there being less sand, more silt and about the same clay. These points are widely separated.

These soils have diverse origins; while those of the Wooster, Strongsville, Columbus and Germantown farms are situated within the glaciated area of the state, only those of Columbus and Germantown seem to be of drift origin. In the case of Wooster the soils show scant evidences of outside materials and the same applies to those of Strongsville. At Wooster the uppermost shales of the Waverly group appear to be the source from which the soils are derived, while at Strongsville this office is performed by the Cuyahoga shale. At Carpenter the horizon is that of one of the shales of the coal measure series.

The behavior of these soils under culture is extremely diverse. We may infer rightly that the loams of Columbus and Wooster and the sand of Neapolis are soils which lend themselves quite readily to cultural methods. One would scarcely infer that the Cuyahoga silt clay of Strongsvillle is, despite the high percentage of organic matter in the area of the test farm, the oft described hard clay so widely distributed throughout much of the Western Reserve. All these soils of like character in the Reserve have a like origin in this same widespread Cuyahoga shale. The soil when like this is very difficult to cultivate successfully and decidedly refractory. It is very difficult to handle this soil in such a manner as to conserve the necessary moisture for a profitable crop. Practically the same description as to the behavior of the soil, and the same water relations applies to Germantown, where the soil is derived from the boulder clay. This Miami clay loam, as it is called by Whitney, is not an easy soil to manage and yields good returns only upon well directed efforts.

The Carpenter soil is possibly a little more satisfactory than the soils of Strongsvillle and Germantown upon the plateau portion whence the samples were drawn, but the slopes offer still more difficult problems in moisture conservation.

TABLE II—CHEMICAL ANALYSES OF OHIO SOILS.

Soils—First six inches.	No. Analyses.	Insoluble matter. Soluble silica.	Potash. (K 2 O)	Soda. (Na 2 O)	Lime. (Ca O)	Magnesia. (Mg O)	Ferric Oxid. (Fe 2 O 5)	Alumina. (Al 2 O 3)	Phos Pentox.) (P 2 O 5)	Sulphur trioxid. (S O 3)	Water and organic matter.	Total.	Total nitrogen.
Wooster—													
East Farm	16	88.71	.21	.39	.28	.39	2.73	2.85	.09	.04	4.41	100.10	.09
South Farm	5	87.53	.31	.24	.21	.39	2.70	3.21	.16	.03	4.93	99.70	.09
Average	21	88.44	.23	.34	.26	.39	2.72	2.93	.11	.03	4.52	99.87	.09
Strongsville	13	84.35	.20	.29	.22	.46	3.24	3.27	.13	.05	8.62	99.74	.19
Columbus	8	83.43	.56	.73	.56	.61	3.41	4.85	.14	.09	5.86	100.27	.25
Neapolis—													
Yellow sand	2	93.21	.05	.06	.19	.12	.99	.99	.13	.03	4.40	99.73	.09
Black sand	2	90.37	.05	.08	.30	.13	.67	.79	.13	.03	7.67	99.74	.12
Germantown	1	90.55	.14	.21	.11	.31	4.95		....	.03	3.70	....	......
Carpenter	2	85.72	.19	.11	.18	.30	6.79		....	.03	....	....	......
Subsoils—Second six inches.													
Wooster—													
East Farm	16	87.87	.25	.38	.27	.43	3.32	3.41	.10	.04	4.11	100.12	.06
South Farm	5	87.67	.26	.28	.20	.45	3.26	3.56	.15	.03	4.02	99.88	.06
Average	21	87.85	.26	.34	.25	.44	3.30	3.46	.11	.04	4.09	100.06	.06
Strongsville	13	83.73	.22	.29	.18	.45	4.72	4.11	.09	.03	5.92	99.82	.08
Columbus	8	83.81	.52	.78	.68	.62	3.62	4.26	.15	.10	5.64	100.32	.14
Neapolis—													
Yellow sand	2	94.31	.06	.07	.14	.13	.82	1.97	.12	.02	2.69	99.94	.04
Black sand	2	93.18	.06	.09	.24	.14	1.12	1.34	.11	.01	4.20	100.10	.11
Germantown	1	89.19	.21	.23	.13	.37	6.06		....	.04	3.86	....	......
Carpenter	2	84.75	.26	.12	.14	.37	8.42		....	.03	....	....	......

Chemical Composition of the Same Soils.

A considerable amount of labor has been expended during the past ten years upon the chemical analyses of the unfertilized plots of the soils we have just been discussing; only the unfertilized plots are now considered. A still larger number of samples, drawn to show the effect of the application of certain fertilizers during a stated period, yet await examination. I am also leaving out of the present discussion the question of soil acidity. The results of about fifty complete analyses of soils and a like number of analyses of subsoils have been completed. The results are summarized in Table II devoted exclusively to chemical analyses.

Giving our attention to the analyses of the various soils we are impressed by high percentages of insoluble matter and soluble silica which is lowest in the soils of Columbus, Strongsville and Carpenter, 83.5% to 85.7%, and highest in the soils at Wooster and Neapolis, 88.4% and 93.2%. If we compare the percentages of this insoluble matter in the subsoil with those of the soil, we note that it is lower in the subsoil in every case save Neapolis, where it is higher in the subsoil than in the soil.

The first condition may be explained by the tendency of crops to remove some of the soluble soil constituents and by the lower percentage of organic matter in the subsoil; in the case of Neapolis the unchanged or slightly altered sand of the subsoil might be reasonably expected to yield a higher percentage of insoluble matter. This insoluble matter is the soil matrix and can scarcely be dispensed with; yet sands are rather too high in it.

The potash is lowest in the Neapolis yellow sand, next lowest in the Germantown, Carpenter and Strongsville samples, while Wooster follows closely upon Strongsville and Columbus has more than double as much potash as any other of these soils. The subsoils for the most part show higher potash percentages than the soils; for Columbus the results are identical in soil and subsoil.

The amounts of phosphoric acid are almost the same, but in the matter of lime and magnesia great divergence again appears.

Lime and Magnesia Ratios and Their Possible Significance.

It is not in the actual percentages of lime and of magnesia respectively, comparing the results of one set of soils with those of another, that strikes us so much as the great contrast in the ratios between the lime percentage and the magnesia percentage in these same soils. These ratios are stated below in the form of a table, Table III, which offers much food for reflection:

TABLE III—RATIO OF THE LIME AND THE MAGNESIA IN THE SOILS OF TABLE II; ALSO AMOUNT OF EACH IN THE SOIL AND THE AMOUNT OF GYPSUM REQUIRED TO MAKE THE LIME EQUAL THAT OF THE MAGNESIA OR A RATIO OF 1:1.

Soils—First Six Inches.	Number Analyses.	Lime (Ca. O.)	Magnesia (Mg. O.)	Ratio of Lime to Magnesia.	Amount of Lime Contained in an Acre of Soil.	Amount of Magnesia Contained in an Acre of Soil.	Excess of Magnesia over Lime.	Amount of Land Plaster Required to Make Lime Equal Magnesia.
Wooster—								
East Farm	16	.28	.39	1:1.49	5,604	7,805	2,201	6,825 pounds.
South Farm	5	.21	.39	1:1.86	4,203	7,805	3,602	11,168 pounds.
Average of two	21	.26	.39	1:1.50	5,204	7,805	2,601	8,065 pounds.
Strongsville	13	.22	.46	1:2.09	4,403	9,206	4,803	14,890 pounds.
Columbus	8	.56	.61	1:1.09	11,208	12,208	1,000	3,102 pounds.
Neapolis—								
Yellow sand	2	.19	.12	1:0.63	3,803	2,402	....	....
Black sand	2	.30	.13	1:0.43	6,004	2,602	....	....
Germantown	1	.11	.31	1:2.82	2,201	6,204	4,003	12,408 pounds.
Carpenter	2	.18	.30	1:1.66	3,602	6,004	2,402	7,445 pounds.
Sub-soil—Second Six Inches.								
Wooster—								
East Farm	16	.27	.43	1:1.59	5,971	9,509	3,538	10,969 pounds.
South Farm	5	.20	.45	1:2.25	4,423	9,952	5,529	17,139 pounds.
Average of two	21	.25	.44	1:1.76	5,529	9,731	4,202	10,826 pounds.
Strongsville	13	.18	.45	1:2.50	3,981	9,952	5,971	18,510 pounds.
Columbus	8	.68	.62	1:0.91	15,038	13,711	....	....
Neapolis—								
Yellow sand	2	.14	.13	1:0.93	3,096	2,875	....	....
Black sand	2	.24	.14	1:0.58	5,308	3,096	....	....
Germantown	1	.13	.37	1:2.85	2,875	8,183	5,308	16,454 pounds.
Carpenter	2	.14	.37	1:2.64	3,096	8,183	5,087	15,768 pounds.

We note that only the soils of Columbus and Neapolis show an amount of magnesia equal to or less than the amount of lime. The ratio in the Columbus soil is 1 : 1.09; that is, for every 100 pounds of lime in this soil there are 109 pounds of magnesia; for every ton of lime there are 2,180 pounds of magnesia. In the subsoil at Columbus you will note that lime is present in larger amounts than magnesia, the ratio being 1 : 0.91. In the sands at Neapolis the ratio shows much less magnesia than lime, although there is a reversal of the Columbus relation between the amount of magnesia in the soil and the subsoil. Referring to the ratio at Wooster we find there for every 100 pounds of lime in the soil 150 pounds magnesia; while in the subsoil for every 100 pounds of lime there are 175 pounds of magnesia. A still greater contrast is shown at Strongsville where for every 100 pounds of lime in the soil there are 209 pounds of magnesia; and for every 100 pounds of lime in the Strongsville subsoil there are 250 pounds of magnesia. In respect to the ratio of the lime to the magnesia in the soil at Carpenter we find it somewhat between the ratio shows much less magnesia than lime, although there is a reversal of the town soil shows even a higher relative amount of magnesia than found in any of the others. This is corroborated by a similar state of affairs in the subsoil.

I had hoped when first glancing through these ratios to discover some evidence of the possible effect of crops upon the ratio of lime to magnesia. Viewing the ratio in the Columbus soil, it would appear that the lime may have been exhausted more rapidly than the magnesia, but none of the other ratios sustain such a view. When we reflect, however, that the actual amounts of these substances are in reality twice as great in the Columbus soil as in the others we may infer that possibly in soils containing low percentages of lime and magnesia percolating waters may dissolve the soluble magnesia and increase the proportion in the subsoil at the same time this process diminishes that in the soil.

None of the soils in this table rank especially high in productiveness and lest the presentation of them without others for comparison may prove misleading to some I give below certain soil analyses made years ago by the Ohio Geological Survey and also one from Kentucky:

ANALYSES OF OTHER SOILS MADE BY OHIO GEOLOGICAL SURVEY.

	Black Swamp Soil, Perrysburg, O.	Versailles, Kentucky.	Tontogany Prairie, Ohio.	Prairie Keokuk, Illinois.	Independence, Defiance county, Ohio.	Swander's Station, Shelby county, Ohio.
Lime, (CaO)	2.64	1.53	.599	.498	.15	.2408
Magnesia, (MgO)	.54	.333	.45	.250	.109	.....
Ratio Lime to Magnesia	1:0.205	1:0.21	1:0.73	1:0.205	1:0.726	.....
Organic Matter	5.37	5.51	9.18	9.05	.97	1.59

The black swamp soil from Perrysburg, Ohio, has five times as much lime as magnesia in the soil, and the absolute amount of lime or calcium oxide is more than four times that in the Columbus soil, and more than ten times that in the Strongsville soil. Nearly the same lime-magnesia ratio is found in the soil from Versailles, Ky., as at Perrysburg, while the other analyses show limited amounts of lime with lime-magnesia ratios varying from 1 to 0.50 to 1:0.73.

But you may ask at this point why I have emphasized this lime-magnesia ratio; that is the next subject to be considered. I may reply that while the actual amounts or percentage of lime and magnesia are important factors, the question of ratios has been taken up to serve as a better introduction to the other question of actual amount. Necessarily, in this brief presentation, I must omit an interesting discussion which may be tested in the ash analyses of crops. I content myself with stating that no crop, unless it is the sugar beet, shows as high a per cent. of magnesia as of lime in its ashes.

Loew Bulletin 1, Bureau Plant Industry, U. S. D. A., 1901, Page 31, has calculated from Wolff's tables the ratio of lime to magnesia in various plants. This ratio varies from 1:0.10 in the carrot up to 1:1.02 in sugar beet; the proportion of magnesia falls below one-half that of lime in the twelve plants noted except wheat, sugar cane, sugar beet and the common beet.

The Amount of Lime and Magnesia Extracted from the Soil by Various Plants.

Loew quotes Ebermeyer giving the amounts of lime and magnesia in kilograms (2.2 lbs.) extracted from a hectar (nearly 2.5 acres) of ground by various plants in one year on the average as follows:

Plants.	Lime Kilograms.	Magnesia Kilograms.
Cereals	16	10
Tobacco	30	15
Potato	40	20
Common beet	40	27
Vine	46	17
Legumes	50	12
Pine forest	70	9

and adds, "Since, however, the roots come into direct contact with only a relatively small portion of the soil, the absolute amount of available lime and magnesia must be very much greater than would follow from the data in the table." Therefore, in the other considerations which follow, it is evident that we must unite with Loew in considering the liming of soil from a physiological standpoint.

The Best Ratio of Lime to Magnesia for Plant Growth.

This subject has been studied experimentally by May in the bulletin previously referred to (Bulletin 1, Bureau Plant Industry, U. S. D. A., 1901) and has more recently been the subject of investigation by Aso in Japan; also by Furata of the same country. (Bulletin College of Agriculture, Imp. Univ. Tokyo, V: (1902): 361-379.) Apparently both of these Japanese investigators have been inspired by Loew, who is now in that country. Furata concludes from his experiments that the ratio of lime to magnesia for the best production of crops should be 3:1 (3 lime to 1 magnesia), for crops which have abundant leaf production; while for cereals a ratio of 1:1 gives the best results.

In this connection the following extracts from the article by May will be of interest; the second extract is the summary of his results and conclusions:

> "As borne out by experiments, gypsum appears to be, all things considered, the most available form of lime to apply in overcoming the noxious influence of an excess of magnesia. An excess of gypsum is little to be feared as the plant seems to be able to use magnesia if present in sufficient amount for its direct needs, whether gypsum be present in large amount or small. On the other hand, a lack of lime in a soluble form is more to be guarded against, for in this case the magnesia, if in a certain excess, will be assimilated to the detriment of the plant. Magnesium carbonate we found might be in a slight excess over calcium sulphate, and normal healthy growth of the plant be made. However, this excess should be small, not greater, with cereals, than 2 to 1. With cowpeas, as shown, a ratio of MgO as carbonate 0.68 to CaO as sulphate 0.2 per cent., while not toxic to the extent of killing the plant, was so injurious as to prevent profitable growth. In these cases the solubility of the salts in the soil were not determined. In liming, therefore, for any purpose, it is advisable to know the lime and magnesia content of the soil, both the soluble and total, as well as the content in the fertilizer applied. Underliming is more to be guarded against than overliming, care being taken that magnesian limestone is not applied where an excess of magnesia is already present.
>
> "Soil analysis shows that lime and magnesia are widely distributed in soils and generally in sufficient quantities for the direct needs of plants. They are not always in the best proportions to each other, from a physiological standpoint, for favoring plant growth.
>
> "Magnesia in a soil in great excess over lime in a finely divided or soluble condition is noxious to the growth of plants. With a great excess of lime over magnesia the physiological action of the plant is hindered and it exhibits phenomena of starvation. An excess of lime counteracts the poisonous effects of magnesia, while the more favorable proportion of the two bases obviates the poor nutrition of the plant.
>
> "The best proportion of soluble lime to soluble magnesia for the germination and growth of plants is about molecular weight 5 to 4, or actual weight 7 to 4.
>
> "The more soluble forms of magnesia, as nitrate and sulphate, are in excess more injurious to plants than the less soluble as carbonate, while the more soluble forms of lime as sulphate and nitrate are more efficient in overcoming the noxious effects of magnesia than less soluble forms as carbonate.
>
> "In applying fetilizers containing magnesia, as in the crude potash salts, liming should be carried on in conjunction unless the soil is known to contain an excess of lime. Where the lime content of the soil is about equal to or less than the magnesia content, lime in a finely divided form, as sulphate, should be supplied with the fertilizer in an amount in excess of the magnesia present in the latter.
>
> "In liming soils the amount of lime and magnesia should be first determined in both the soil and the material applied. In this way only can the process be intelligently carried out and the best ratio between the two bases for the promotion of the growth of crops be maintained."

Leow in 1902 (Bulletin College of Agriculture, Imp. Univ. Tokyo, IV.; 382-383) commenting upon the work of Aso and Furata observes:

"One of the beneficial effects of liming is believed to consist in 'unlocking such potassa, as is at the time unavailable for plants;' but it may be objected that such potassa as can be unlocked in the soil by slaked lime or carbonate of lime, can surely also be unlocked by the rootlets themselves. The writer showed years ago that one of the effects of increasing the lime consists in the rich development of roothairs and this explains satisfactorily the fact that on liming the soil, the plants become capable of absorbing an increased amount of potassa. A second very important physiological effect of lime is the rich production of dark green and normal chlorophyll bodies."

It may be added in this connection that grains show relatively higher amounts of magnesia than of lime.

With these results before us it must be apparent to all that the ratio of lime and magnesia in our station and test farm soils demands very careful experimental study. By the same token it must be likewise clear that these various soils which we have analyzed are types of many others in which the same holds true, at the same time that we admit they do not apply to all soils in Ohio. There is no reason known to me why we should question the essential correctness of the experimental results I have just quoted from Loew and others. Crop production of the most profitable sort cannot be secured unless the physiological demands of the plants are met. When the plant demands a ratio of 2 lime to 1 magnesia are we justified in expecting that a ratio of 1 lime to 2 magnesia will give great crop returns? I have prepared and presented this paper chiefly for the purpose of raising this question of lime-magnesia ratios. Have we not throughout Ohio many soils which grow good crops of wheat and possibly of some other cereals, but yield indifferent crops of other kinds; and conversely those better adapted to other crops than wheat or cereals? It is worth while to investigate this matter with thoroughness; yet I do not apprehend that the investigation can be quickly concluded.

Correction of One-Sided Lime Magnesia Ratios.

This correction must be obtained as you will readily infer by applications of calcareous compounds; we have, as you have discovered, no ratios indicating great need for magnesia, although the sands, like those of Neapolis, may properly be dressed with dolomitic (magnesian) limes in which the percentage of magnesia is somewhat less than that of lime. Quite evidently it will require excessive applications of dolomitic lime to correct the lime-magnesia ratios prevailing at Wooster, Strongsville and Germantown.

For such as these we have available land plaster or raw gypsum which contains no magnesia and also certain calcareous limes which contain magnesia in limited proportion.

Table IV. gives the composition of various limestones of the state; the composition of gypsum is as follows:

TABLE IV—ANALYSES OF OHIO LIMESTONES AND THE LIMES FROM THEM.

(Limes Nos. 1, 2, 3, 4 and 5 are of theoretical composition; No. 6 from analysis by J. W. Ames.)

	1	2	3	4	5	6
	Rex. (Myers.) Av. 2.	Marblehead. (Bloomfield.) Av. 3.	Kelley's Island. (Lord.) Av. 4.	Columbus. (Lord.) Av. 5	Trenton. Michigan. (Ames.)	(Fremont.) Fostoria, Ohio. (Lord.)
Carbonate of lime	95.31	80.90	87.69	89.92	84.99	56.41
Car. of magnesia	3.40	17.60	10.66	5.51	13.27	41.98
Alumina and oxid of iron	.57	.14	.19	.92	1.38	.28
Salicious matter	.50	1.71	1.26	3.28	.83	.42
Total	99.84	100.35	99.80	99.63	100.47	99.09
	(Theoretical)	(Theoretical)	(Theoretical)	(Theoretical)	(Theoretical)	(Ames)
Lime (Ca O)	95.21	81.58	88.44	88.07	84.804	55.42
Magnesia (Mg O)	2.88	15.08	9.11	4.58	11.26	39.93
Iron and Alumnia	1.01	.25	.34	1.609	2.44	1.15
Salicious matter	.89	3.08	2.26	5.73	1.49	1.18
Carbon dioxid						.58
Water, etc.						1.74
Total	99.99	99.99	100.15	99.99	100.03	100.00

Composition of Gypsum, or Land Plaster. (Lord.)

Lime (CaO)	32.35
Sulfuric acid (So3)	46.38
Water	19.70
Magnesia (MgO)	.54
Alumina	.60
Insoluble residue	.91
Total	100.48

Table III shows that about 7½ tons of gypsum or land plaster per acre will be required to make the quantity of lime equal to that of magnesia in the first six inches of soil at Strongsville.

This is upon the basis of 32.4 per cent. of lime oxide in the land plaster. On an average at Wooster about four tons of gypsum is required per acre to obtain the same result. The amount at Germantown would be about 6¼ tons. Bear in mind in this connection that I make no recommendation of the actual amount to be applied at a given time. In the application of land plaster or lime the amount must be gauged with respect to the immediate effect the application may have upon the physical behavior of the soil in question. In this same connection I wish to point out that gypsum is a neutral compound and not an alkaline compound like lime; gypsum would, therefore, be of no use to neutralize soil acidity, while it would be useful to supply available lime without adding magnesia. A theoretical advantage seems also to hold for gypsum for this purpose.

If a lime is to be chosen to increase relatively the amount of lime to that of magnesia only the excess of lime above the magnesia present therein will be available in correcting the ratio of lime and magnesia. Used in this way the best calcareous limes of the state will go about twice as far as the gypsum; conversely only one-half the amount of such lime will need to be applied. An exceptionally pure lime like those from Trenton, Michigan and Rex, Ohio, will go further even than this. The dolomitic limes, of which we may take that of Fostoria as a type, will not be useful in correcting the ratio of the lime to the magnesia in the soil, while being entirely satisfactory to neutralize soil acidity under other conditions.

It will be necessary as time passes to determine the benefits resulting from applications of limes made to increase the actual amount of lime and magnesia present in the soil. The relative greater productiveness of certain soils having larger amounts of lime and magnesia than those under discussion would raise this question very seriously. Liming is often discussed as if it were done merely to change the physical character of the soil. We must conclude, I judge, that the uses of lime are both chemical and physical; likewise upon the chemical side we have the two objects of correcting the soil acidity and making the proportions of lime and magnesia such as are most favorable to the growth of crops.

Results of Lime Applications for Corn at Strongsville.

The following table gives results of applications of calcareous limes, dolomitic lime, raw limestone, gypsum, poatsh salts and sulphates of soda and magnesia upon a small area of the Strongsville test farm. The crops are for the years 1901, 1902 and 1903. The plots are each one-twentieth acre.

The raw stone is that called marble dust from Rex, Miami County. It contains about 95 per cent. of carbonate of lime and about 3 per cent. of carbonate of magnesia.

TABLE V—RESULTS OF LIMING EXPERIMENTS, STRONGSVILLE.
(Plots one-twentieth acre each.)

Plot.	Treatment.	Average increase or decrease—		Increase Per Acre.					
				Section A 1901.		Section B 1902.		Section A 1903.	
		Corn.	Stover.	Corn.	Stover.	Corn.	Stover.	Corn.	Stover.
		Bus.	Lbs.	Bus.	Lbs.	Bus.	Lbs.	Bus.	Lbs.
1	Nothing								
2	Fremont lime, 2 hours	6.53	213	.12	133	5.77	20	18.94	487
3	Fremont lime, 4 hours	4.15	107	3.41	247	5.09	440	14.14	512
4	Nothing								
5	Fostoria lime, 2 bushels	3.96	264	5.88	547	.67	93	6.66	153
6	Fostoria lime, 4 bushels	10.02	449	6.91	453	9.53	367	13.62	527
7	Nothing								
8	Raw stone, 2 bushels	4.08	89	4.05	40	1.90	7	10.09	220
9	Raw stone, 4 bushels	2.66	2	4.16	100	7.24	507	11.05	400
10	Nothing								
11	Gypsum, 2 bushels	2.99	267	6.79	480	2.95	7	5.14	313
12	Gypsum, 4 bushels	7.13	293	9.00	800	1.24	153	11.14	227
13	Nothing								
14	Sulphate Potash, 5¼ pounds	2.06	446	2.19	273	5.28	233	1.29	60
15	Muriate Potash, 5 pounds	4.51	100	3.69	7	1.72	113	11.57	180
16	Nothing								
17	Sulphate soda, 13 pounds	2.03	180	6.03	100	6.10	427	6.01	567
18	Sulphate magnesia, 7½ pounds	.54	95	2.96	260	1.67	107	3.00	133
19	Nothing								
20	Fremont lime, 2 bushels Sulphate soda, 13 pounds	3.03	98	.04	340	.38	153	8.67	107
21	Raw stone, 2 bushels Sulphate soda, 13 pounds	6.61	55	4.45	460	.05	47	15.33	247
22	Nothing								
23	Gypsum, 2 bushels Sulphate soda, 13 pounds	4.10	180	7.14	53	191	33	1.05	160
24	Sulphate magnesia, 7½ pounds Sulphate soda, 12 pounds	2.48	193	1.78	187	3.05	193	2.61	200
25	Nothing								
26	Acid phosphate, 8 pounds	5.03	1	2.05	213	3.43	127	9.62	80
27	Acid phosphate, 8 pounds Sulphate potash, 5¼ pounds	2.64	95	4.81	183	2.57	93	.53	40
28	Nothing								

The Fremont lime was obtained from the Continental Sugar Co., Fremont, and made from the Trenton, Michigan, limestone. The Fostoria lime came from the Seneca White Lime Co., Fostoria. It will be noted that for the year 1903 the largest increase in grain, 15.33 bushels, was from the Rex stone and sulfate of soda; the next best, 14.14 bushels, from the heavy applications of Fremont lime, followed by the light application of the same lime, 13.94 bushels, and by the heavy application of the Fostoria lime, 13.62 bushels, in the order named. Gypsum for the heavier applications gave 11.14 bushels increase. These results were after manure had been applied over the whole area; the manure increased the yield of all the plots, untreated and treated, but resulted in a larger increase of yield from the liming.

Considering the average results and those of the first two years, 1901 and 1902, the Fostoria lime leads in increase of grain. All these results are preliminary and tentative, but are at least suggestive.

Amount of Lime or Land Plaster to be Used at a Single Application.

The amount of lime, whether calcareous or dolomitic (magnesian), to be applied at one liming is a matter for experiment. It is suggested that smaller and more frequent applications are likely to prove safer and in the end more satisfactory than excessively heavy doses at one time. It will be noted that

40 bushels per acre and 80 bushels per acre were applied in the Strongsville experiment with corn; these are the equivalents of 3,200 pounds and 6,400 pounds per acre. Upon the Strongsville soils an application of 6,620 pounds of Fremont lime having 84.8 per cent. calcium oxide and 11.3 per cent magnesium oxide would be required to make the lime-magnesia ratio 1:1. This is 4-9 that required of gypsum (Table III). It will, therefore, require a little more than one application of Fremont lime at the rate of 80 bushels per acre and two and one-fourth aplications at the rate of 40 bushels per acre to accomplish this result, while two and one-third heavy applications of gypsum will be required and but one and one-half applications of the highly calcareous marble dust or raw Rex stone, while 16 tons of Fostoria lime will be needed to make lime and magnesia equal. When hydrates, that is, calcine hydrates, so called, are used, one-fourth to one-fifth more will be required than of quicklime from the same stone.

I do not wish to worry you by prolonging this discussion; I have presented this matter that all may understand why I have stated on several occasions heretofore that I do not consider it a matter of indifference whether magnesian or calcareous limes are used upon many Ohio soils. There are some special considerations with respect to particular crops which it is hoped to touch in experiments in the course of a few years. Co-operative experiments in liming soils are also badly needed

Soil Treatment Investigations Require Long Periods.

It is not likely that reliable results can be obtained in a short time; long periods and widely distributed experiments will be required in the line of lime, gypsum, or fertilizer applications. This has already been shown with fertilizers; it may be predicted for the others. The application of the principles suggested in this paper may not be expected to prove exceptions to the experiences in other soil treatments.

The wisdom of permanent test farms for the experiment station and of continued work at any given point, will, in my personal judgment, be fully supported as the periods of experimentation grow longer and longer. Such work must be carried forward for some time to end in judgments that will not call for reversal.

President Houskeeper: We will not discuss this paper at this time, but will pass to the next subject, "A Hard Earth Road," by D. Ward King, of Maitland, Missouri. (Applause.)

A HARD EARTH ROAD.

Mr. Chairman, Ladies and Gentlemen: I am well aware of the fact that you are tired, and no one is more keenly alive to the feeling of weariness on the part of an audience than I. I come here today at the invitation of your State Board of Agriculture to talk to you about something which we have discovered in Missouri. I promise you I shall be as brief as is consistent with my duty on this occasion.

I came to my native state pleased to think that I may bring to you from my adopted state a message. I came, I confess, with fear and trembling. My experience in Ohio, so far as I have been outside of the cities, has been almost entirely in that part of the country where stone and gravel pikes were plentiful, and, as I have said, I came fearing that my coming might be a mistake—that I might have no message for the people of Ohio, but on investigation in my native county and from remarks which I have heard since I came here this morning, I conclude that Ohio, no less than Missouri, is in the mud at muddy times.

Somebody has said to me that the roads in the northeastern part of Ohio are in the very best possible condition at this time, but that the farmers have not had enough rain. (Laughter.) They tell me there are times when the rural mail carriers find it difficult to get over the road. When we have enough rain the same condition exists in Missouri. The improvement and maintenance of the earth roads of the United States challenges the most earnest attention of the best brains in the country. There is, I believe, no question that comes closer to the majority of the rural population than this matter of taking care of the earth roads.

I come today with a very simple proposition. I hope you will not condemn it because of its simplicity. I come with no theory; I do not come to you with something that somebody else thinks can be done, but with something I have done myself; and I am here because of the doing.

And now I am afraid of you—really, I am afraid of you. I am afraid that after spending ten or fifteen minutes to explain the implement that I have used I will hear you say, "We have been using something like that on our farms for lo, these many years," or if I show you a model of it, I am afraid you will take no interest thereafter. Yet I will take the risk and will show you a model of what we call in Missouri a Split Log Drag (exhibiting model to audience). No doubt, many of you have used just such an instrument to drag the wheat field. It does not look like a road machine, and yet I invite your attention to the pictures, one on either side of the stage. I invite your attention to the lowermost picture. When you have time to examine it you will see a road that was made with this instrument out of Missouri clay.

Question: What county, please?

Mr. King: Holt, within twenty-five miles of Iowa; within thirty miles of Kansas and Nebraska. I beg your pardon if I offend you, but in the garden spot of the United States. (Laughter.)

Question: In God's country?

Mr. King: "In God's country," somebody says on the front seat; somebody who has been out there I presume.

But I promised to hasten. Twenty-five years ago I went to northwestern Missouri. I settled on the farm where I now live. It is now two miles and a half north of Maitland, Missouri, but when I went there I was twenty miles from the railway. I have been over this mud road proposition from the beginning. At the beginning the roads in my neighborhood were from a quarter of a mile to six miles wide (laughter) and the only implements that were needed were an axe and a spade. We use the axe to cut willows and we would lay them in the sloughs and spade loose earth upon them to hold them down so that the horses would not be tripped.

Along in the '80s some time, having become disgusted with the mud and seeking a way out, I sent to Pennsylvania and secured the first road grading machine in the state. Although we found the grader was a good thing, we could not get over the roads often enough with it.

In the spring of 1896 I hitched a team to a contrivance something like the model I have shown you—though not nearly so good—and went down the road, driving one horse on each side of the wheel track, and pushed the loose earth over into the center of the road. I drove from my front gate to my neighbor's front gate, toward town. When I got to my neighboor's front gate, one-half mile, I turned and came back over the other wheel track, thus pushing all of the loose earth from both sides of the road into the middle of the road.

That seems a simple operation; it is a simple operation, but, gentlemen, the results from continuing it are marvelous. I have yet to see a man who has tried this experiment for three months who does not say the results exceed anything that he could be made to comprehend by argument.

I dragged the road from my front gate to my neighbor's front gate for four years before anybody else in that immediate neighborhood took hold of it. Missourians have to be shown. (Laughter and applause.)

A member: Have to get the idea from Ohio?

Mr. King: I did not get the idea in Ohio. (Laughter.)

Another member: We put the stuff in you before you went there, though. (Laughter and applause.)

Mr. King: I hope every gentleman who has applauded the implied censure on Missouri will go home and make a drag. (Renewed laughter.) If he does not the censure is for Ohio.

But during those four years the neighbors all learned to draw the lines tighter and get out the whip when they came to this half mile of road, they knew that nine days out of ten, no matter what the condition of the other roads, they could drive at a swinging trot. That piece of road became famous, so famous that the Missouri State Board of Agriculture sent a man there to see what was going on, and when he returned he said in his report:

"If the road commissioners and supervisors of the state of Missouri could stand as I did on D. Ward King's road and hear his explanation of how it has been managed, it would be worth one hundred thousand dollars annually to the state of Missouri"

Question: How often do you drag the roads?

Mr. King: Drag the road after every wet spell—I kept track of the number of times that I dragged one year and in that year it was twelve times.

But, gentlemen, I feel that my mere assertion will not carry very far. I want to see if I can convince you that my statements are reasonable. Somebody said to me—and I think it was a gentleman of prominence who is not very far distant—"If you can do anything for our clay, we will be glad to hear you." Something can be done for anybody's clay or anybody's gumbo. Clay and gumbo may make the best earth roads. Why, gentlemen, the earth that makes the meanest road makes the best road; the very same characteristics that make a road stay bad when it once gets bad will make it stay good when it once gets good.

The first thing that I secured was smoothness, and I am sorry that many people in different audiences that I have addressed have never gotten beyond that point; I find them as I visit places a second time.

It is very important not to lose sight of the fact that you must push the dirt to the center of the road, because you must get drainage by getting elevation. The second thing that you get—and it is the more important—is the obliteration of the wheel tracks.

Now, we farmers and you farmers here in Ohio who drive on pike roads don't drive, you open the gate, get out into the road and the team follows the troughs, the tracks—

Dr. Chamberlain: That's so.

Mr. King: Yes, that's so.

Well, if the road is dragged the wheel track is obliterated and the horses have no choice, so we get all the road packed. After you drag three or four times there will be no water between the wheel tracks; the water will all run off because you have elevation and you have smoothness.

But I did not discover the most important thing until after I had been using this method for several years. This most important thing is that the material with which you are working is waterproof. The center of the road is puddled, and puddled earth will hold water just like a jug. Every time you drag the road you spread one more layer of waterproof material over the road and pack it down hard.

Director Thorne: In what condition of dryness do you do this after the rains?

Mr. King: A gentleman asks in what condition of dryness we do this. I used to say that the road should not be dragged until the soil was dry enough to leave the face of the drag, but I believe now that a man cannot hurt the road even if he goes out when it is raining. Mr. Hall, chairman of the World's Fair Committee of the Missouri Legislature, went on the road when it was so muddy he had to wear rubber boots and his horses sank half way to their hocks; but let me read his statement:

MARSHALL, Mo., April 27, 1903.

Hon. Geo. B. Ellis, Columbia, Mo.

Dear Sir:—I began to try to fix my road right after the big snow of February. I harrowed it when it was so muddy that a horse would sink half way to his hocks, and when it dried a little I harrowed it again. Then I made a cheap drag out of a bridge plank and dragged it. I can hardly believe my own eyes when I look at it. A loaded wagon won't make any more impression on it than it would on a floor. I don't believe I have spent a half day on it altogether, and honestly I wouldn't near take $50 for the comfort it has been to me and my friends and neighbors.

MATT W. HALL.

You observe that Mr. Hall dragged the road at a time when he just smeared the mud on the surface of the road and the sun baked it hard; so, after five or six years, I am converted to dragging the road pretty nearly any time.

The worst time that you can drag the road is when it is too dry, because you will produce dust. It is wise, however, in the interest of the team and for the best interests of the road, to drag as soon as you can after the earth will leave the drag.

Perhaps we can get at this matter more quickly by asking questions.

Question: You drag it with the flat surface forward?

Mr. King: Yes.

Previous questioner: Doesn't that answer the same purpose (referring to the road planer)?

Mr. King: Yes.

Previous questioner: What is the difference?

Mr. King: How many men does it take to use the planer?

The questioner: It takes about three men and a supervisor—

Another gentleman: And four hundred dollars.

Mr. King: You begin to see the difference.

Doctor Chamberlain: Does it mash it down more?

Mr. King: It may. But, gentlemen, after you have used the drag six months you will find it necessary to shoe it with iron, because the dirt will get so hard it will cut the wood; it has to be shod with iron.

Question: Do you use more than one team?

Mr. King: We generally use only two horses.

Question: At what angle do you draw that to the road?

Mr. King: A gentleman asks at what angle you draw this——

The questioner: Compared to the road?

Mr. King: Well, now, everything depends. These questions draw out things of which I should have spoken before.

A man ought to ride on the drag, because, to begin with, if he rides he is more likely to drag. (Laughter.)

Question: Did you get that idea from Ohio? (Laughter.)

Mr. King: I thank the gentleman for not charging that up to Missouri. (Renewed laughter.)

A different slope on the hill; a different ditch at the side—all of those things make it necessary to change the angle of the drag just a little, and this change can be made by stepping one way or the other. Sometimes you will drag a place where it is a little too wet and if you will step to this end of the drag the mud will slip off. You gentlemen who have used a drag will understand how convenient it is to stand on it.

Perhaps I had better give you the dimensions: A log nine feet long, which ought to be at least ten inches through—ten or twelve. Split the log; put both flat sides to the front. Bore three two-inch holes; go to the hedge and get some stakes and wedge them into the slabs and put the slabs at least thirty inches apart—wider rather than narrower. That will look very wide to you, but if it strikes a stump or a rock it won't look so wide—you will wish it was wider. (Laughter.)

Question: What time in the spring would you undertake to use that drag; after the frost has gone out?

Mr. King: If I lived in Ohio on an earth road I would make a drag tomorrow afternoon and I would use it just as soon as I could move a little dirt.

I have learned that Ohio people are a good deal like Missourians and I have learned that the people of Ohio are in the habit of blaming their supervisors—

A voice: That's so. (Laughter.)

Mr. King: That is a measly trick of which I didn't suppose Ohio people were guilty. (Laughter.) Down at the foundation of all the bad roads in the United States are the people, and we are the people. Public sentiment is not right.

Suppose that five or six men should go to work out poll tax in Ohio, and suppose that one man is careful to work just as hard as if he were at home, will any of the other men be inclined to sneer at him?

A voice: No, call him a fool.

Mr. King: "No, call him a fool." Gentlemen, it is that kind of public sentiment that allows poor roads to exist. When the proper public sentiment exists in a community, the man who shirks will be the man that is sneered at. And when that time comes the road will have improved. All the blame comes back on us; it is useless for us to try to put it on the county commissioners or anybody else.

Question: Who does the work?

Mr. King: Ah! There is the rub! Gentlemen, I have taken care of the half a mile, a portion of which is shown in those pictures, for seven years without it costing the township or county a penny. It has not cost me anything in the way of money; it only takes half an hour to drive down to my neighbor's and back. The last time I dragged the road the boys were gathering corn, and while they were unloading corn I took the team and dragged the road, getting back before they were ready to return to the field.

Question: Did you keep your ditches well opened before?

Mr. King: Not before we dragged.

Mr. Rankin: When you give that drag the proper angle to draw the dirt toward the center, don't you have some difficulty in keeping it in the road?

Mr. King: Not unless you overload it.

Question: You never have found that rolling would possibly aid?

Mr. King: I believe that rolling would aid; but I say nothing about it, because not one farmer in ten possesses a roller. I am trying to keep this proposition so simple that every man who owns a team can care for a piece of road.

Question: What is the character of soil which makes your road?

Mr. King: The soil which is shown here (indicating photographs) is a clay; the top soil is a black prairie loam, but the road cuts on the hillside and goes down into yellow clay.

Question: What kind of drainage do you use?

Mr. King: I beg your pardon, but we use a drag. You see I have not made that point clear. Will you pardon me if I tell a story on a preacher (laughter)—on a Kansas preacher?

A voice: Go ahead.

Mr. King: A Kansas preacher had made arrangements to send his daughter away to school. When the time came for her departure he found he was not able to accompany her, so, at very great pains, he wrote out the instructions as to where she would leave the cars and which way she should turn from the depot and how she should go to the street car and what kind of a street car she should take and the street number of the institution which she was to visit, and he put money in the purse with these instructions, but on the way to the depot the girl became nervous and asked: "Papa, how—where—will I take the train?" He says: "My daughter, I put that down and it is on the paper and the paper is in the purse." And then before very long she asked: "How about" something else, and he answered: "It is all on that paper." And a third time she asked a question, and he said: "My daughter, the instructions are in the purse."

And, I say to you when you ask me about drainage, when you ask me if I don't think it is wise to go and get the big road machine to fix it up first, I say: "The instructions are in the purse," and the instructions are to go drag the wheel track and be satisfied with the beginning the first dragging makes. After you drag the wheel track the third or fourth time (if you drag it continuously following each rain) you will find the center of the road will be higher than any other part of the road between the wheels. Then you have drainage.

If you desire to widen the road, plow a very shallow furrow just outside of the mark made by the end of the drag. Then with the drag throw this earth toward the center of the road, spread it, and you have made the road two feet wider.

Question: How wide is the roadway?

Mr. King: How wide is a wagon?

Questioner: Depends upon what kind; whether Stover or just a common Yankee wagon.

Mr. King: The road here (indicating) is twenty-five feet between the ditches.

Questioner: We don't have wagons that wide. (Laughter.)

Mr. King: That remark came from an Ohio man. (Renewed laughter.)

Question: How do you make these roads where they have not been made before; where they have just begun, can you make a road there?

Mr. King: Yes, sir.

The questioner: Make the grade from the wheel tracks?

Mr. King: Down in Missouri a man said that the road over which he had to drive had cut down in the sod—in the gumbo—and he wanted to know if he could make a road there. I said: "Surely it is not a main-traveled road?" "Oh, yes," he said, "a main-traveled road." And somebody got up in the back part of the hall and he said: "We had that kind of a road over in our country and we fixed it with a drag."

Question: Always throw the dirt toward the center?

Mr. King: Always throw the dirt toward the center until the neighbors begin to complain about its being too high in the center. You know there are some people who want their corn shelled. (Laughter.)

The road shown in that lower picture (2B)—and I continue to refer to it because it tells you things that I could not tell you in an hour—was taken, I think, on the eleventh day of October, in 1902. In the spring of 1902 there had been complaint about its being too steep in the center, so I had dragged that road all summer to flatten it on top.

Somebody asked about keeping the ditches open. I find it necessary to go down the ditch about once a year with a plow, to straighten it and keep the blue grass from getting into the road, and then moving the dirt up into the road. But all of those things will come to a man; a man has only to make a drag and get started.

Question: How about on a hill where you have water washing out ditches in the road and you just have it wide enough to go along the side of it; now are going to work such places as that?

Mr. King: I would look in the purse and get the directions. (Laughter.)

The questioner: It is too late now.

Mr. King: I know you think it can't be done; I know that I am "up against" all that; I meet skeptics every place I go, but, gentlemen, wherever you can take a wagon you can take a drag—I will take that back. I found one gentleman over in Indiana who presented a situation that I could not quite understand, and, finally, after a good deal of questioning, I found that he was driving his wagon between two rocks. (Laughter.) Of course, the drag wouldn't work under those conditions.

Question: I would like to ask if you allow the grass to grow between the road and the ditches and sod there permanently?

Mr. King: This gentleman is getting three years ahead of my proposition. I am here trying to just get you started. If a man will drag a road for six months or a year the first thing he knows he will want his road better than his neighbor's and he won't be satisfied with going once, but he will go twice or oftener.

Since I have diverged we will go on to suppose you drag the road next week; suppose the top has thawed just a little, you can then make more show on the road than at any other time. This is what I call the cornmeal period; the loose dirt on top of the road is as easily moved as cornmeal.

If you should drag the road now, and once or twice in February, then at the time when oat sowing is here, if you should have a hard rain or a deep snow, you can get out on the road before you can get into the field, because the road will dry first. The road will have no water on it.

. gentleman: I only want to say that your proposition will work in Ohio, for I have tried it.

Mr. King: Thank you, sir.

The gentleman: I live about one-half to three-quarters of a mile out of Van Wert. They said I could have an old road scraper. I fixed it up and hitched four horses on it and have made the road good. I went down and back and I had the best piece of mud road that went out of Van Wert.

Question: What are you going to do with the men that growl at the commissioners?

Mr. King: That kind of men, like the poor, are always with us. If they cannot growl at the commissioners they will find something else to growl at.

It is best to pay no atention to the man who growls. You and I, who are progressive; you and I, who are willing, always do more than our share, and must go ahead.

Question: Is there any great advantage in having two pieces?

Mr. King: There is a great advantage. When you begin to drag the road there are sure to be some holes in the road. If you have only one piece it will drop into the hole and scoop it out, making the hole deeper, but if you have two pieces one will keep the other up and each will drop a little loose dirt, and after three or four times those holes are all filled.

How many places are there on the earth roads in this country where you can drive two miles at a three-minute clip without taking a flying leap when the buggy strikes a bridge or culvert?

If you use a drag it will fill up all those holes and you can't tell where the bridges and culverts are, except from the noise.

Question: I want to call your attention to the hollows on roads where there is a great deal of travel. By just hooking on behind a wagon it seems to me on our gravel road it would be a great deal better than just that.

Mr. King: They are using the drag in Indiana on the gravel roads.

Mr. Rankin: Suppose I am willing to drag the road at the proper time and my neighbor is not?

Mr. King: Well, sir, if I were you I would go and sit up with him. I beg your pardon, sir, if you think I am joking, but that is the absolute truth. I dragged the road for four years to my neighbor's front gate before he took hold of it, and after he began he was just like you, he wanted to get after the fellows on the other side of him who did not drag. I said: "Hold on, Uncle Levi, you can't do it that way. Didn't you use to be ashamed when you looked at the road?" "Yes," he said, "I did." That is the way you have to work the other fellow; so there is no joke about my statement.

Mr. Eudaley: I realize the force of the brother's question. We are asked by our supervisor—we call it supervisor here—to work out so much time on the roads. We are not so liberally minded here, seemingly, as you are in Missouri—

Mr. King: I am sorry for you.

Mr. Eudaley: I am quite sure when you take to joking me you are up against it. I want to know, as this brother wants to know, if you have anything to suggest, where the supervisors or township trustees have been brought together——

Mr. King: No, sir.

Mr. Eudaley: A moment ago you stated that some blacksmith had made fifteen drags——

Mr. King: But they were made for neighbors. There is one other point that comes to me. The county court of Holt in which I live will furnish the material if farmers will make the drag and use it. We are that far along.

Mr. Eudaley: Have you any suggestions to make to the people in Ohio?

Mr. King: Yes, sir.

Mr. Eudaley: I would like to hear them.

Mr. King: I have to make another talk tomorrow afternoon.

Mr. Eudaley: I thought you were trying to give it all this time. (Laughter.)

Mr. King: Some of these things may have appeared to be said in a joking way, but really, I do not intend to joke about it.

Let me tell you what we did right in my neighborhood. The years slip by and I forget just when it was. I think it was about three years ago. I met one of my friends who lives two miles further out of town than I do—now you see these people are tired (as some people arise to leave); won't you let me off until tomorrow?

Mr. Eudaley: I will let you off. (Loud applause.)

President Houskeeper: We will now have a selection by the quartette.

A song, "Violets," sung by The Williamson Sisters' Quartette.

And thereupon adjournment was taken until 10:00 a. m. of following day.

WEDNESDAY MORNING SESSION,

January 13, 1904.

The State Farmers' Institute met and was called to order at 10:05 A. M. by President Houskeeper, who announced that the first on the program would be music by the Quartette.

A song, "Shoogy Shoo," sung by the Williamson Sisters' Quartette. (Applause.)

President Houskeeper: The next number on the program is "The Horse on the Farm," by R. A. Hayne, Adena, Ohio.

THE HORSE ON THE FARM.

Mr. President, Ladies and Gentlemen: Those of you who attended the meeting of the Ohio Horse Breeders' Association at Townshend Hall last evening and listened to those instructive talks given by men who are acknowledged masters of their subjects, have heard all that I may give in the way of good ideas—and a whole lot more—and more intelligently expressed, so that what I shall have to say I will try and cut short so as not to weary you any longer than I can help.

It does not take a very smart man to see that the horse and the farm are inseparable. Take away the horse and the farmer must shut up shop; and take away the farmer and the world would stop, and, of course, the horse would stop, too.

Where do the horses come from that pull the plows and the harvesting machines on our farms; where do the horses come from that pull the cabs and the express wagons; where do the horses come from that fill the livery stables all over this land; where did Nelson Morris and Company, Swift and Company, Armour and Company, Libby, McNeil and Libby's four and six-horse draft teams come from; from whence came those great pieces of handiwork that pull Mr. Devereaux, Mr. Billings and Mr. Smathers over the speedway at almost lightning speed; where were spent the colthood days of those great horses which on the grand circuit race courses the past year showed such record-breaking speed that so far as we know in the history of the world has never been equaled; where do we find the colts that mature into those round body beauties of lofty carriage and high action that we see in front of the pleasure vehicles of today?

The answer to all these questions is the same one we would give to the query: "From whence come the great men?" They come from the farm; the Ohio farm, if you please.

Let us first consider for a little while that horse that can be reared and trained at the least expense and at the same time is absolutely indispensable to the American farmer—the draft horse. And by a draft horse I do not mean the thirteen or fourteen-hundred pound chunks that we see scattered over the country today. Nearly all of these plug horses are the result of that mad scramble which took place in this country a few years ago, when nearly everyone was trying to raise a horse almost regardless of kind or quality, and we still have enough of them left.

The plug horse is all right for some kind of work, but he won't do to sell.

The draft horse that I would call your attention to is one after the pattern of those shown at the late International Show at Chicago. I did not get to see those horses myself, but I well know from the reports of the show that they approached near in form to the typical draft horse; the very pictures of those great six-horse teams are enough to warm the blood of any lover of a draft horse. I can see in my mind's eye a perfect draft horse, a horse that weighs right around two thousand pounds, and if his weight is on the upper side of that figure so much the better—a horse of great weight with lots of quality. Our draft horse must have a set of limbs under him that in form cannot be surpassed by the sculptor's art. The gummy-legged draft horse with bogs and thoroughpins won't do. And under that set of limbs he must have a set of large, round, well-formed, wide-heeled feet. We have no use for the low-heeled, flat-footed horse. He must have a short back, well sprung ribs, broad, deep body, large around the girth and powerfully muscled. He must have style and action. The time is coming; aye, it is right here now, when with all classes of horses style and action, with a reasonable amount of service, commands the highest figure. How are we going to produce a draft horse of this kind? In the first place, I would say let us select for the mother of our colt a draft mare of size and quality; let us select a mare whose sire and dam are both animals of size and quality and whose grandsire and grandam are both animals of size and quality; and then let us pick for the sire of our colt a draft stallion which approaches as nearly our ideal as we can find. Let us pick a draft stallion whose sire and dam, whose grandsire and grandam; whose great-grandsire and great-grandam were all made of the right kind of stuff. And now when we have found this we have good reason for the belief that our colt, with proper care, will be good enough to show at the International.

Let us suppose for a little while that we have the colt, and he is healthy and strong, and one day old, and that we have a nice roomy box stall for him and his mother. What is the first thing to do? Why, teach him to eat, or rather give him a chance to teach himself, and that he will do when he is about one week old. Then let us not forget to give him his daily feed, and his mother also should have a portion.

Let us get him halter-broken, so that we can lead him right away from his mother without a tussle, and so that he will stand quietly wherever we tie him, and when the flies get bothersome and the sun hot let us put them in a dark stall, so that he can grow in peace, and when the pasture gets dry and brown let us give them some green fodder; and when winter comes we will give the colt a warm stable with plenty to eat and drink, and the next summer we will repeat the treatment of the summer before and the next winter the same thing over again, and then when warm weather comes again we will have a nice, big, round, draft horse, ready to harness and go to work and pay for his feed from that time on and maybe pay for a little of that which he has eaten before.

It won't take long, with good care, to get him seasoned to hard work. Then we can use him profitably on the farm for two years; and some one will be ready to buy him at a price that will pay well for the trouble, providing he does not get a bad dose of pink eye and go blind; or take distemper that will leave him coarse winded, or get kicked or cut in barbed wire, that will blemish him for life, or go crampy or get boggy.

But right here is where the draft horse has the advantage over all other kinds. Even if one or all of these misfortunes should befall him he can still work, and some one will buy him when crippled horses of all other classes are begging. (Applause.)

Now, we would say to the farmer, if you want to raise a horse for heavy work, with the idea of some day selling him, and you don't have a fair prospect of raising a genuine drafter, for the love of the name of horse don't try to raise one at all. You will get enough misfits when you do the best you possibly can.

However, the draft horse is not the only one that can be raised on the farm—not by any means. What about the light harness horse—the American trotter; the so-called heavy harness horses—the hackney or French and German coacher, or the saddle horse? The American trotting horse—that breed which was originated right here in our own land—is one of the greatest contributors both to business and pleasure. It furnishes the genuine business road horse, the race horse, the speedway or matinee horse about which Mr. Devereaux told us last night. It furnishes a large part of the walk, trot, canter and saddle horses—and I cannot refrain from saying our standard bred horse also furnishes the finest heavy harness horse known to the world.

I know there are a whole lot of men who are ready to fight right along this line. This is my opinion based on what little I have seen and read. Surely the American trotting horse is one of the greatest breeds of horses known to the world, and, as Mr. Devereaux said last night—in fact, he said all that I have to say about the trotting horse that is worth saying—the trotting horse today would have been a still greater breed had it not been for the fact that about the time of the adoption of the 2:30 record standard the light harness horse breeders of this country went speed crazy, and they did not hesitate for a minute to sacrifice any good quality for the sake of getting a little more speed, and the result of this mistake, as you all know, and as they found out later, was that about one-half of the trotting bred horses of this country—and by trotting bred I mean trotters and pacers both—were slab-sided, ewe-necked, homely creatures with bad legs. But now in a great measure the tide has turned, and the Ohio farmer with a taste for raising light harness horses can do no better than to follow as far as possible the plan of Mr. Thomas W. Lawson on his great farm in Massachusetts. I do not mean that we need to erect stables that cost from eight hundred to a thousand dollars a stall, lighted by electricity and heated by steam, but this is what I mean:

Those great trotting bred stallions that Mr. Lawson purchased at long figures are in the first place trotters themselves, bred in the purple of trotting blood; they come from families that are noted for producing trotters, and not only this, but they are stallions of show horse style and action. And, as Mr. Lawson says, ever since the establishment of his farm he has been scouring this country for the purpose of gathering together a band of one hundred and twenty-five brood mares that are up to his standard in breeding, soundness, style and action, and although he was ready and willing to pay all that they were worth and more, the last account I read he had succeeded in securing less than half the number he wanted. And if you happen to find a real high class young trotting mare on any up-to-date stock farm you will see that she is either not for sale, or such a price is asked for her that it will make her hard to buy. There is no indication that we need to get scared over the possibility of an over-production of high class light harness horses—but they must be high class.

Twenty-five or thirty years ago no more attention was paid to a spavin or curb than is today paid to a little splint or road puff. Farmers generally cannot afford to train and develop speed in their light harness horses, at least to that high degree that is necessary to make racing tools of them, but if they breed and raise the right kind of light harness colts this will not be necessary in order to make good sellers of them.

The high priced light harness horse of today is sixteen hands high, or close to it; he weighs right around twelve hundred pounds, and he is a sound horse of high style, a trotter with lots of action; and when we own a horse of this description, thoroughly country broken, we own something valuable. I say "country" broken, because in this progressive time when the country is crossed and recrossed with railroads, with overhead bridges, and we have automobiles, and mining towns, and oil derricks, when we get a horse thoroughly accustomed to all this there is not much left for him to scare at in the city and we can come very near turning out a finished product.

At Townshend Hall last evening, Mr. Booth gave us an instructive talk on the American saddle horse, and he also showed us three specimens of the American saddle horse, so that we could learn from seeing as well as hearing. The gaited saddle horse is a purely American product, like the American trotting horse. I am a great lover of the gaited saddle horse, and there is nothing that will furnish outdoor pleasure better than the smooth-going gaited saddle horse, unless it would be to drive over the speedway behind Lou Dillon or John A. McKerron.

I doubt if it would be advisable for a farmer to undertake to raise saddlers unless he is especially fitted for the saddle horse business. I will tell you—and I know it is a fact—that it takes as much talent and patience to thoroughly educated a gaited saddle horse as it does to become an artist at playing the piano or to paint a portrait in oil, and it is surprising the number of people who ought to know who do not know what a gaited saddle horse is. I have seen horse owners who have spent their lives in this enlightened republic open their eyes wide with amazement to see a horse from the country show five or six distinct gaits at the rider's will. A gaited saddle horse is surely a source of pleasure, as well as being one of the most useful animals on any farm, where something extra in the horse line is appreciated. Finally, we would say do not try to raise a general purpose horse. I venture the assertion that there is no such thing as a genuine general purpose horse, and if you start out with the intention of breeding and raising a horse to fill that description the chances are ten to one that your horse will answer the description of nothing as well as it will that of a scrub. I thank you. (Applause.)

President Houskeeper: We have a full program for this afternoon and I am quite sure you all want to recess promptly at twelve o'clock, so that I feel like not allowing any discussion until we get through, and then if we have any time we can take up these subjects.

The next number will be an address, "Domestic Science at the Ohio State University," by Miss Minnie A. Stoner, Professor of Domestic Science, O. S. U.

DOMESTIC SCIENCE AT THE OHIO STATE UNIVERSITY,

Members of the Ohio State Farmers' Institute: The Domestic Science Department at the Ohio State University is beginning its seventh year. There has been a great demand for technical training in our state institutions, and for this reason the department was established. The course was planned for no one class of women, not particularly for city girls or for country girls, but in the hope that it might appeal to the womanly side of all women. The desire has been that the practical and scientific study of home problems would perhaps become interesting and that women might see more in household duties and in household science than mere routine; to recognize that economics is the foundation of domestic relations; that science is of great importance in all that pertains to right living; that art and ethics have no higher use than to purify and beautify every-day life and the every-day subjects; that history and literature of the past have a direct bearing upon the present. In other words our Board of Regents believed that the practical application of pure science and art to every-day life in our homes might help our women to more ideal home life and to more ideal national welfare.

The word "Home" is perhaps the most expressive in our language. No other nation has its equivalent. The French refer to their "house;" the Japanese say "within," but the Anglo-Saxon have within their house the home. Particularly significant is this word to an American, for we are a nation of home owners, and from each one of these life centers radiates its own peculiar influence for goodness or for evil; for temperance or for intemperance.

The home is subject to growth the same as any other organism. If we wish to raise wheat we cultivate the soil; if we wish our homes to become all that is beautiful in art, expanded in literature; all that is thorough in science, graced in benevolence and hospitality, we must cultivate those arts which help to develop the home and its highest ideals. In order to do this we must train the home maker so that she may be able to carry out these ideal conditions.

It is rather hard to take a technical subject of this sort, enter into all of the details in an outline of a course and make it thoroughly interesting. However, I shall attempt to explain in as short a time as possible, the different subjects classed and divided as we considered them in our course.

For convenience, the studies pursued by the Department of Domestic Economy are subdivided as follows: Food economics, including the general and special work in dietetics—dietaries—and the history and manufacture and use of all kinds of foods; preservation of foods. Under the next topic the hygiene of clothing, which enters into the work of sanitation and also into the practical laundry work and household economics. All of these bear particularly upon scientific lines. The making of clothing and also the study of textiles and historic costumes are classed under the general head of domestic art. Therefore we have the two branches of work in our department.

The college offers two courses: A two years' course in Domestic Science, which has been prepared for those girls who from lack of time and preparation and lack of means can not afford to devote four years to the instruction. And a four years' course is offered which leads to the degree B. S.—Bachelor of Science in Domestic Science.

The outline of the lectures and laboratory work covers perhaps one-third of the regular schedule time; the other two-thirds of the schedule time is devoted to the allied university subjects. The young women of the Domestic Science course, aside from the special work in chemistry, household zoology and household botany, together with the technical work in Domestic Science and Domestic Art and the subject of Horticulture in the senior year, have identically the same work in elective literature, history, education, language, etc.—in credit hours, etc.—the same as the young women have in the college of philosophy, arts and sciences; they are in those classes with those young women.

The young women from the college of philosophy, arts and sciences are allowed to elect the work of the sophomore year in Domestic Science. One year of science work is required in the short course and in the long course preceding the technical work of domestic science and art. The work of the sophomore year, the junior year and the senior year is devoted to the technical work, together with the allied subjects in the university.

We allow the elective system so far as posible in our advanced course. Those who are preparing for professional work in domestic science, for dietitician or hospital work, for teachers in colleges and public school work, take the elective, the seminary course offered in the senior year. Those who are simply preparing to have the general knowledge of the university course, together with the technical training, take the straight four years' course.

To enter into details, on page forty-three of our present catalogue, we have the following subjects: The first term in the sophomore year, food economics comprises a study of the evolution of society as affected by food conditions. Here we trace the various effects that have been brought about by the different food systems in the different nations, particularly studying our own. Next comes a study of the five food principles, the chemistry as applied to the preparation of foods, the classification of foods, the function of the various foods in the body—the science of nutrition; the history and manufacture and use of all kinds of foods, vegetable and animal. With this course parallel readings are required in the library. The laboratory work includes the experimental work in cooking, where the young women are taught to prepare the typical foods, etc.

The food economics of the second term is a continuation of this course with the addition of marketing and serving. The marketing is done at the Columbus markets and is as thorough as it is possible to devise. We study the relative pecuniary value of foods in the various seasons of the year. The work consists of preparing weekly dietaries for the working man and woman, for the professional man and woman, for dietaries for children. In these dietary studies we use the American Bulletin of the Department of Agriculture at Washington, Bulletin number twenty-eight. It may be of interest to some of you to investigate the contents of that bulletin. We find the bulletins published at the department at Washington are invaluable to us in our work.

In dietary investigation we find that most of the evils in diet come from badly prepared food; that the original composition of the food is not of such great importance as the method in which it is prepared and served. Very good food may be converted into almost an indigestible substance by bad preparation. All of these comparisons are demonstrated in the experimental work and the points in regard to the economic nutrition, the proper selection and proper preparation are observed.

In the third term of the sophomore year we take up the work of advanced food economics, including general dietetics, high grade work in the preparation of foods, a brief study of the preservation of foods, together with study of the investigations and special research.

In the fall term of the junior year we take up the work of the preservation of foods and hygiene of clothing. Household economics, one of the required studies of the junior year, considering the best location of the house, its hygienic and sanitary construction and arrangement. I will say here that young women are taught the work in household architecture in the Industrial Art Department, and are taught to plan houses for the rural districts, as well as for the cities and small towns. They also are taught certain work in plumbing and proper instructions are given in mechanical drawing, so that they may have an understanding in regard to the proper arrangement and construction.

We simply consider the sanitary and hygienic side in this subject of the household economics and do not take up the art side and repeat that work as it has been given in the other department. A study of water supplies of cities and country homes and towns, the sanitary drainage and the care of plumbing; the discussion of the approved methods and management of the different methods of heating, lighting and ventilating, so that they have a thorough knowledge of the various systems in operation, a study of the best practical and scientific management and methods in the management of household affairs, in regard to utility, sanitation and economy, and a study of the proper household accounts and expenditures—cost of living. This is a very important topic.

Cost of living: In the investigations made it has been found that over one-half of the salary in many localities is used for expenditures for food, and by making the dietary studies as we do along these careful lines, taking a certain sum of money and planning the food for a certain number of people for a certain period of time, we have been able to secure standard dietaries, giving the very best of nutritious food, meeting the demands of the body in all conditions, for the sum of perhaps one-fifth of the salary or income, thus lessening the total cost very greatly, demonstrating the advantage gained by scientific management and the observing of certain points of economy. That leaves the remainder of the salary for expenditures for those things which pertain to the higher life and for the accumulation of the bank account or for special investment, etc.

The next topic considered in the junior year is the work in therapeutic diet and emergency work. Our lectures and demonstrations are designed to set forth the principles of the dietetic treatment of various diseases and to consider such emergency cases as frequently occur in the home. The student is taught how to supplement the trained nurse in emergency work; to properly care for fractures, burns, cuts and bruises, to properly take care of other wounds; to avoid any of those serious dangers which occur from lack of care and how to carry out the principles which underlie trained nursing. The demonstrations are carried on in our laboratory. In this work the foods suitable for infants and invalids are taken up in a broader way than they are in the general work in food economics. This is a very important subject, because there are so many things involved which are of great importance. The dietaries for hospital work are perhaps the most particular dietaries we have to study, and the dietiticians in these subjects have found great difficulty in overcoming many of the evils of diet, but as we study the different symptoms of various diseases and analyze the applied dietaries and their effects upon these diseases we find that we are gaining a great deal in the new investigations and work. There is a great need for more research in this line of scientific study. In the next four or five years perhaps all of our hospitals will probably be supplied with their special dietitician, as there are a great many demands made on this institution now for trained workers.

The next topic, the theory and practice of domestic science, which is elective, offered in the senior year. In this course young women are trained to teach Domestic Science and Art. Many of our students are now preparing for the course and are teaching the classes at the Godman Guild here in Columbus in the university settlement or college settlement work. Their experiments there and investigations have been very helpful and practical. The work in domestic art, which covers a part of the work in the junior year and in the senior year, first includes the work in plain sewing and the study of the artistic evolution of society; history of the early races and how it has assisted in the development and culture of the race; the study of all kinds of textiles and practical work in plain sewing, hand and machine work, with the tailor work of dressmaking and millinery. These take up the important topics.

In 1890, when the New England Kitchen was established, it was thought by the science investigators that the food question was the basis of the whole matter in the instruction. Experience has proved that we must take a broader view and consider the science of the study of textiles and of art in the home, and the subject of sanitation, as well as the food question; so that you can see that in our course at the University we have endeavored to take in all of those subjects of importance and value.

The study of botany, zoology, chemistry, physics, physiology and bacteriology makes it possible for the student to enter into the functions of the various organisms and to appreciate the changes constantly occurring in plants and animals, to understand the needs of the body. In a superficial way we know that this has been taught for some time, but that it is imperative for those who attempt life at its best to know definitely all that is required for the human being and how to provide these.

In the industrial activities of our national life it has been necessary to bring about these changes in education, to give a certain amount of technical training, together with the classical work.

The educative value, then, of domestic science has been satisfactorily proved; it aids the student to observe and reason, to work accurately and how to carry on scientific research relating to the improvement of the home in all its phases. It provides a way to meet the demands of the ideal system of education for women.

I will not take more of your time because this explains the details of our work at the University. I thank you. (Applause.)

President Houskeeper: The discussion of this subject will be taken up by Mrs. Mary E. Lee, associate Editor of *Farm and Fireside,* of New Plymouth, Ohio.

Mrs. Mary E. Lee: The description of the work which Miss Stoner has given us certainly will fill every farmer in Ohio with pride to think that we have in Ohio a school that is doing the work, not only for the farmer girl, but for all the girls in our state.

The late Herbert Spencer ridiculed the notion of giving the best part, the preparatory part of life, to training and to education that would not be used in after life, and he insisted upon training the young man and the young woman for practical work, work that would help them to fill their places in living the very best, making their work effective, making it easier, better and the result more satisfactory. From this agitation that has been going on for a number of years we have technical training schools of all kinds, and probably the most important of all is that pertaining to domestic science.

About one-half of our population are women; probably seventy-five per cent. of these women engage in home life at some period of their lives, and through their hands goes a very large per cent. of all production, especially that of farm. Isn't it the part, then, of good business—a good business proposition—to give these workers the very best possible training—give them the power to do their work effectively and wisely?

I think it is not necessary for me to take up any time discussing the work; I would suggest, however, that each of you secure a catalogue of the Ohio State University, and you can familiarize yourselves with it after the description that Miss Stoner has given you of the work.

There is one point that I want to impress, which is this: The women as a rule have been rather slow to accept the revelations which science has made for us, and yet science has done no more for any class of people—not even for the scientific investigator himself—than it has done for women. Women left the home to enter productive enterprise and sociologists have continually decried the leaving of the home life and the entering into of economic fields, yet when science found out and demonstrated to women that their work was fundamentally in social evolution—that it was a fundamental factor—it gave new dignity to their labor and made them anxious to take it up; to show that their work—housekeeping—required intelligence, skill, brain.

The prime aim of our life is human happiness, and the more time that we have to devote to cultural study and cultural life, and the more diversified are our capacities for enjoying life, the happier we will be. The domestic science work and training make it possible for us to do our work skillfully, quickly, effectively, and therefore leaves us more time for the cultural studies. That, it seems, would be reason enough if there were no other object in engaging in the work.

There is one question I have been asked to explain, and that is: Would it pay a girl to pay her own way through college; can a girl take a course in domestic science and will it pay her to do it? That depends very largely upon the girl and upon the college. If she has a fair amount of strength and a good deal of grit and determination she can pay her own way through college, but whether it will pay or not depends entirely on the girl. There is certainly plenty of opportunities. Five or six years ago one of our leading household magazines said that in the city of New York alone there were ten thousand openings for women housekeepers at prices from twenty to one hundred and twenty dollars per month. Of course that includes board and lodging. Those were positions of course requiring skilled workers, the kind of workers that our domestic science department is producing. So, from the financial standpoint, it would certainly appeal to the girls, and when we think of the work as a fundamental factor in our social evolution, that also must make a very strong appeal. I thank you. (Applause.)

President Houskeeper: I believe we are all ready to concede that our daughters need, for their life work in the home, just as good special training as men do for any other calling in life.

We will now have a selection by the quartette.

A song, "A Little Dog Bark," sung by the Williamson Sisters' Quartette. (Loud and long continued applause.)

As an encore, the quartette sang, "A Kentucky Babe." (Applause.)

President Houskeeper: The next number on the program is an address, "Feeding Ensilage for Beef and Mutton," by C. P. Dyar, Marietta, Ohio.

FEEDING ENSILAGE FOR BEEF AND MUTTON.

For several years I have been using ensilage both to fatten cattle for market and to winter yearlings, to go on grass in the spring. I have made silage of corn, sorghum, rye and clover, oats, cowpeas and grass.

All do very well, but I like corn the best. The grasses and small grains can be ensiloed when the weather is too wet to make good hay of them, and the storage space is small; but when the weather is fairly good it is easier to make them into hay. Sorghum, in my own experience, became too acid and was not eaten as well as other kinds. So I now fill my silos with corn and use any kind of hay I may have to feed once a day at noon. It is not absolutely necessary to do this and for considerable periods I have fed nothing but ensilage and with only good results. There is no tendency to get off their feed, and they do not seem to tire of it. Nevertheless, all animals relish a change, and if one has good clover, alfalfa or cowpea hay, it helps to balance the ration. they like it and do better. The cost of handling the fodder part of the corn crop, in any way, is considerable, and the pay for doing so, must come largely from the part actually eaten, which nearly all of it is when fed in the form of good silage.

I raise no stock, but buy my feeders, both sheep and cattle, in the surrounding hill country and have much trouble to get, even approximately, the kind I want. They are bought in the late summer and fall and turned on grass until I am ready to feed, which with cattle, is now earlier than formerly, because unless the grass and weather are exceptionally good cattle are apt to shrink after the middle of October and it is a costly mistake to allow. By thus commencing early with the maximum of grass flesh to start with, they are ready for market sooner, the manure is drawn out and we are ready for spring work. I have sometimes tried to bring them in for a feed at night and turn them to pasture in the morning, but my barns are some distance from pastures, and besides, the cattle very soon conclude that silage is good enough for them and spend too much time waiting around the gate to come in. So I find it much better to put them in once for all, and let the sheep have the remaining grass.

The transition from grass to ensilage is an easy one. In three or four days, usually, they are eating all they can, and when the noon feed has been alfalfa, they make almost as much gain the first month as any. The reason for this, no doubt, is that cattle so fed retain much of their grass form and do not show that straightness of outline so noticeable in full fed corn cattle.

To secure this, the hay should be mostly omitted during the last month or six weeks and corn meal, cob meal or some of the by-products fed in its place. But ensilage and alfalfa make a meat that shows well on the block, the fat not being of that intense Jersey yellow characteristic of full corn fed cattle.

Fed in this way, such cattle as I have been able to buy around me have averaged about 1 3-5 pounds per day, which with the advance in price makes about $4.00 per head per month, and this pays about $3.25 per ton for silage and $9.00 for alfalfa hay, so that as a net result I get about the average market price for my crops, sold to my own cattle on the farm. This is nothing remarkable, but it is at least better than selling them to some other fellow to feed on his farm. This year the alfalfa is fed to sheep and in its stead the cattle get four pounds each per day of cotton seed meal spread on the ensilage in tight mangers, with timothy hay at noon. Fed so, the meal seems to stimulate their appetite for rather more ensilage, but they eat so little timothy that it is difficult to feed little enough. The meal did not arrive till the end of the first week and it was ten days more before they were getting as much as four pounds per head. At the end of the month they looked to have made a good gain, but the scales said only one pound per day; this was disappointing, but I consoled myself with the notion that they had lost most of that grass form, because they ate so little hay. The second month they showed up very well; twenty head gaining 1,815 pounds, practically three pounds per day. Whether this rate can be maintained for any length of time is yet to be shown. A pamphlet came with the meal advising that the utmost caution should be observed, and some sixty days elapse before reaching a maximum feed of five pounds per day; but we reached four pounds in ten days on ensilage without any noticeable ill-effect. This meal is said to be constipating and ensilage is a good corrective of that tendency. Besides being both moist and fine, the meal adheres to it and both are eaten and remasticated together.

Several days before shipping I quit ensilage and feed hay and grain and only hay the last day. So treated, they drift about as other cattle do, say thirty to fifty pounds, though one car lot lost but fourteen pounds per head.

My feeding silage to sheep was confined to two seasons, when there was some left after the cattle were sold, and the sheep got it. So far as I can see, it is just as good for them as for cattle and they take to it as readily. They do not seem to tire of it and those getting it somewhat excelled the others on dry feed, both in weight and appearance. Last May, when the sheep were turned to grass there was still some silage left, part of it two years old and not very good, but they raced into the barns every night to nose it over, eat all the corn and such of the fodder as was yet palatable.

So far as my experience goes, I would prepare to feed sheep with the same confidence of success that I would cattle. As my cattle mangers are permanent fixtures along the sides of the rooms, all that is necessary to feed sheep there is to clean out and bring in the tight bottomed sheep racks. So far then, as feed and arrangement go, I am about as well fixed to feed one kind of stock as the other, and which I shall feed in the future will depend very largely on the respective price of feeders.

Now, of course, the question as to whether any one shall use ensilage to make beef or mutton depends on many things other than the mere matter of its fitness for such purposes.

But its advantages briefly seem to be these. Its compact and convenient storage; the long days and good weather that usually prevail when the corn is ready; or, if the weather be wet, it is only an annoyance, rather than a serious hindrance. The crop is all removed from the field and if cut low, as it should be, the fields are in fine shape to sow to wheat or a cover crop. Stock of any age eat it with equal ease. It is one of the best feeds upon which to spread nitrogenous by-product foods. There is practically no danger of over feeding. Made with any kind of short bedding the manure is quickly available for any kind of early crops. Should a late summer drouth appear, as it often does, seriously lowered the yield of solid marketable corn, the total value of the crop for ensilage is not so seriously decreased and the loss can easily be made good with a little cotton seed or oil meal, and lastly the hog is eliminated. The latter fact is at least a convenience, and if he is there merely as a scavenger to save waste it would seem good policy to have him out of the way. If it be contended that he is really the main spoke in the wheel, as being the most economical producer of meat and profit from grain, then why not eliminate the cattle, husk the corn on the stalk, save all the expense of handling the latter both ways and let the hog have it?

The most important of the advantages, as I see it, for the small feeder like myself, who looks upon animal feeding as one of the best ways of conserving and augmenting soil fertility, for other purposes than feed production, is the adaptability of ensilage to be fed with the various nitrogenous foods that can always be bought in any quantity.

There were so many things to learn about the whole business that I have worked up to my main object slowly, and it is only this year that I bought seven and one-half tons of cotton seed meal to start with. Early potatoes and garden crops pay vastly better with us than any kind of a feed crop, but to do so the land must be as generous as the self-feeder, able any day to give all that is required of it, and more.

This method seems to me better than buying commercial fertilizer and success with it will have a very modest definition, simply that purchased foods shall pay their cost in meat produced. For profit I am willing to take chances in the larger corn, potato and garden crops grown with the manure. What foods are best to buy for this purpose I have mostly yet to learn; but I believe that corn ensilage furnishing a maximum amount of carbonaceous food in the most convenient form is the best preparation for such an attempt. (Applause.)

President Houskeeper: This has surely been a very practical paper on the subject, in which many of us are interested, that of feeding ensilage to fatten stock.

The next will be an address, "Commercial Orcharding in Ohio," by W. W. Farnsworth, President Ohio State Horticultural Society, of Waterville, Ohio. (Applause.)

COMMERCIAL ORCHARDING IN OHIO.

Mr. Chairman, Ladies and Gentlemen: After the very clear and interesting treatment of the orchard topic, to which you listened yesterday forenoon from Doctor Chamberlain, it would seem unnecessary and unwise for me to detain you for any great length of time in the abstract treatment of this subject, therefore I promise to be brief.

The history of "Commercial Orcharding in Ohio" may well be divided into three epochs.

The first or "Infant Industry" period, of prosperity, was in the pioneer days of "Johnny Appleseed," when nature rendered more assistance than did the orchardist.

Among the many advantages of that period were a virgin soil full of humus, moisture and fertility, which yielded an abundant supply of balanced rations for the successful growth of tree and fruit.

Many of our insect and fungus enemies had not found their way to our shores, and some which are now troublesome were then contented with their forest foods and did not trouble our orchards.

True, the orchardist of those days was not blessed with the "Horticultural Missionary, otherwise known as a 'Tree Agent,'" and his choice of varieties was rather limited, but tastes were not so capricious and market demands were easily satisfied, and apples which were not suitable for market yielded satisfactory returns in cider, before that beverage had been displaced by malt products.

Again, the limited facilities for transportation furnished poor markets in many localities, but where a good home market existed, the grower had but little fear of outside competition and the Ghost of Ben Davis did not trouble his dreams.

The second period may be likened to the period known by stockmen as "Between Hay and Grass" and by them regarded as a critical time in the life of the animal, and a critical period it surely was in the history of commercial orcharding in Ohio, and may be known as the period of adversity and decadence.

Much of the natural fertility of our state had been squandered. The soil had been robbed of humus and become heavy and sodden thereby and from lack of drainage. Insects and fungi had scented their weakened prey from afar, and were here and still coming to "be in at the death."

Blight, scab, yellows, rots, canker worm, curculio, codling moth, etc., came down on us like the hosts of the Philistines and if we did occasionally succeed by rare good fortune in growing a fairly good crop, when we went to market we were likely to find it supplied with fruit from more favored sections.

The horticulturists of Ohio then realized that they were facing serious problems which they must solve or be driven out of their business.

Probably no one appreciated the situation more fully or has done more to assist the orchardists of Ohio, and elsewhere to solve these problems, and fight these battles, to a successful finish, than has Prof. Green and his able corps, Profs. Selby, Webster and Parrott, and their assistants.

Their investigations aided by the co-operation of practical orchardists throughout the state and given to the people at large by the publicity of station bulletins, horticultural meetings and reports of institutes, and the agricultural and horticultural press, have brought us to the third or present stage of triumph, where we begin to feel that we are indeed to be "Given Dominion."

I would not be understood as considering that our troubles are all over, and that no new ones are likely to arise, but I mean that we are now building from the bottom and are studying foundation principles, and that the victories we have won in the past will give us the needed strength and confidence to successfully meet any other obstacles which may arise in the future.

We are now carefully studying the needs and requirements of the tree and not blindly following dogmatic rules which may fit one case and pinch another.

We have learned that one of the requisites to success is healthy foliage, and that to secure this we must spray to preserve it from damage by scab, leaf curl, shot hole fungus, and canker worms.

Bordeaux has long been the acknowledged standard among fungicides, but in insecticides there seems to be a greater diversity of opinion.

A few years since we had learned that apple scab could be prevented by early and persistent spraying with bordeaux, thus insuring healthy foliage, and vigorous, fertile fruit buds, but we often found our crop of apples began, toward the close of the season, to show great damage from codling moth.

I must confess that it was one of the most discouraging features I ever encountered when my orchards as a result of my care seemed to be models of symmetry, vigor and fruitfulness and then as I was nearly ready to reach out my hands and grasp the rewards of my labor the worm stepped in just ahead of me and claimed them, and I found most of my crop on the ground and ruined in spite of my care and spraying.

Careful study of work done in other states failed to shed much light upon the question, as they seemed to be as much in the dark as we were in Ohio.

About this time the Cox brothers found that they succeeded in saving their fruit by continuing their spraying quite late in the season, and it seemed clear to me that the second brood of moths were responsible for the damage.

I visited some of the fruit growers of Canada to study the results of their system of bandaging trees, and made some tests of my own as did Mr. Miller who was working on the same problem, but I did not feel that we had found the panacea yet.

I could hardly understand the need of continuous frequent spraying throughout the season, and resolved to apply the usual spraying after blossoming and then wait until about the time of the appearance of the second brood.

A test of this plan gave very encouraging results.

Next fall or winter Dr. Chamberlain reported good results from the use of disparene; I concluded to use it the next season, and applied it about July 15th and the problem was solved to my satisfaction.

I feel that we have at last conquered the codling moth.

Thus one by one the obstacles are overcome.

Then the tree must have food and drink of proper composition and in the right quantity and we are studying how to secure this most effectively and economically.

We have learned that we can feed for wood and foliage or we can feed for fruit, just as the stockman feeds for milk or feeds for fat.

We have learned that cultivation conserves the moisture necessary for the proper development of tree and fruit, and also that indirectly it lessens the capacity of the soil for retaining moisture by lessening the amount of humus therein.

We have learned that cover crops exhaust moisture while growing and add to the food and humus in the soil when decomposed.

We have learned that where an orchard is seeded to grass in infancy and remove nothing but apples (and lots of them as Friend Vergon says) and the trees mulched as far as possible, we are wasting no fertility by cultivation, and are adding humus to the soil.

Given these cardinal principles as a basis, the successful orchardist must work out the plan best suited to his individual needs.

I wish to emphasize the fact that while we can receive great help from the experience and teachings of others, we must give more deep personal study to these problems before we may hope to attain the highest measure of success.

We must, as Prof. Roberts would say, "Ask the trees."

So far we have spoken only of the growing of the fruit, but the commercial orchardist not only wants good fruit and lots of it, but must have a good market as well.

Transportation facilities have greatly improved of late, but in many instances, the service is so poor, or the rates so high, as to leave no margin of profit.

The perishable nature of our product is also a hindrance, in many instances, and perhaps more than all else the lack of co-operation and honest business-like methods.

Co-operative packing houses have proven a decided help where conditions are such as to admit of their operation.

The work of the National Government in the Horticultural Division at Washington is a long step in the right direction.

They have done what no individual grower could do.

Under their direction competent men have studied methods of refrigeration and transportation, and have combined practice with science, in a manner characteristic of all the work of this Department (free seeds excepted), by putting their theories to the final test, the market.

Perishable summer apples, pears and even peaches have been successfully and profitably marketed in England, and this new departure opens up a new field of almost untold possibilities.

Then too our home markets are poorly supplied in many instances with fruit which will tempt the purchaser, or in packages, convenient and inviting.

Many a would-be purchaser has passed by the large unwieldy barrel of apples with all its uncertainties, and the possibility of trash in the center, and bought a peck at the corner grocery.

In the average city market it is seldom possible to buy a basket of choice apples at a fair rate.

We must learn from the methods of our brethren on the Pacific Coast and pack better and more honestly and attractively.

Carefully reviewing the field, we can but conclude that the future of commercial orcharding in Ohio is bright.

True, there are many foes to meet and conquer and we know not what the future has in store for us.

But we feel a confidence born of past victories, that we shall eventually overcome them.

Scientific research, and the study of the observing thinking horticulturist, assure us of progress.

Our State University is fitting many young men yearly to come up and help us along this line, and we feel certain that in Ohio "Commercial Orcharding" will yet rank high among the pleasant and profitable industries. (Applause.)

Mr. John Begg, of Allen County: I was very much interested in the paper in reference to feeding cattle. I would like to ask Mr. Dyar whether or not he is able to sell the cattle for as much, finished upon this ensilage, as he can sell cattle in the markets finished upon dry feed?

You know there always seems to be a premium put upon dry fed cattle in the spring of the year—those that come from the feed lot—over against those that are finished on grass, and the information I want is whether the feeding of ensilage would not have the same effect as it would have to put them upon grass, and cause them to deteriorate in quality.

Mr. Dyar: They do not deteriorate in quality for me, because I take them off grass and put them on ensilage in the first place. I don't believe that ensilage fed cattle, unless they have been finished off for a few weeks on dry feed, will show, as I stated in my paper, the same straightness of outline, and the same hardness of flesh that will be shown by corn fed cattle. In the few car loads of cattle that I have shipped I have never gotten within a quarter of a cent of the top of the market, and I have always had to compete with corn fed cattle, cattle that probably had been on feed longer than mine had on ensilage.

Two years ago I sold a bunch of cattle at five and one-fourth cents per pound at home, in the middle of the winter, and the butcher began to take them along in April, taking them four or five at a time. And when it came to the last bunch—I believe there were ten head left—he asked me if they could not go over a week or two longer. There was some ensilage left and I said yes. The ensilage would have been wasted if it had remained in the silo all summer, so I told my help to feed it to those cattle, and he did so. These cattle were the tailings of the bunch. Those cattle did not eat all the fodder; they ate the corn and as much of the fodder as they wanted, and the result was that they assumed the shape and hardness of regular corn fed cattle, and the tail ends were the best ones for the two weeks or three weeks more of feeding.

But, now, I do not claim that ensilage alone is a complete feed; I do not claim ensilage and alfalfa hay will make exactly the same form as when they go into the market with full fed corn fed cattle, but I think it will make a cheaper feed and so far as I know it is a finer appearing meat. The fat is whiter; it does not have that intense yellow; it is beautiful meat, and it is made, I think, somewhat cheaper.

I do not feed full corn fed cattle and I can not say so much about the cost as other people can, but I get from thirty to forty-five dollars per acre out of my ensilage corn. I do not know whether other feeders make more money when they feed all the corn to cattle or not; that is for them to say.

So far as I have fed cotton-seed meal it seems to me it is likely to make a valuable feed. As I stated, if you are going to feed corn fodder in any shape whatever, why, it is a good deal better to handle it in such shape that the cattle like it, and if you can not do that, why, then do not handle it at all.

I do not keep any hogs, but I handle a flock of chickens which return something.

Question: I would like to ask the gentleman the relative value of the corn and ensilage against the corn feed. So far we have got no information as to the relative value of the corn fed to the steer as ensilage, over the corn fed. How much corn per day do your steers get in the ensilage? That is what I would like to know. We all know that in corn fed from the shock a good steer eats from a third to a half a bushel a day. We know what it costs to feed them on the dry corn; we do not know what it costs on the ensilage.

Mr. Dyar: Mr. Chairman, all that I can answer about that is the fact that I have produced so much per acre. How much do other men produce per acre? That is the absolute test in the end. The test is how much does an acre of corn produce in money when the beef is sold, by this method or that method. Is not that the proper test? As to the value of corn, you must ask somebody who knows more about that than I do. I endeavor to put the corn in when it is in a green state. Does it contain as much food value in that state as it does when it has had time to harden and dry? If it does not, I do not get so much, and that is all there is about it.

President Houskeeper: Mr. Scott wants to know what kind of corn.

Mr. Dyar: I have used two kinds. I use a kind of corn that has been grown in my locality a long time, Yellow Dent corn. I selected it when it went about ten to twelve rows of kernels to the cob, and now it runs about sixteen and sometimes eighteen or twenty. Corn that is in the Muskingum Valley grows pretty high—twelve to fourteen feet sometimes.

Then I have used another variety of corn; protein corn I suppose you would call it. It is called the Taylor corn, white, very large corn, very small cob, and always produces an ear, and it always looked to me, in looking at corn in the silo, in both my own and the neighbors, that it produced rather more corn in proportion to the entire body of ensilage than the big corn. I am not certain that I am right about it; I think I am. Yet I shall plant larger corn; I want more ensilage and a larger quantity.

Question: Is this corn that you speak of a flint or a dent?

Mr. Dyar: It is a flint corn, and, therefore, it is very much better to feed as ensilage.

Question: You made the statement you got so many dollars worth per acre. Does that include cotton seed meal that you buy and add to that corn?

Mr. Dyar: No, sir; I have not fed cotton seed meal at all until this fall. I do not yet know. I have only stated that the increase in weight has been so in the two times.

Question: Does that include the hay?

Mr. Dyar: Yes, sir. I bought cattle for so much and I sold them for so much; I know about what I fed them. I did not weigh out; I did not make exact experiments as they do at the stations; I leave that for them, but it shows about nine dollars a ton for my hay and about three dollars and twenty-five cents a ton for my ensilage. I will say that other people claim that they get a larger return. Likely they do. That is my statement of about what I get, as near as I know. Some years I get more and other years less. I buy my cattle as cheaply as I can and I sell them for as much as I can, but I can not control the market either way.

Question: How many tons per acre of ensilage?

Mr. Dyar: Well, that will depend on the season. This last season we didn't have rain from the fifth day of May until about Christmas time, so that our crop was comparatively light. I do not suppose on my land I got over ten tons; other years I will get fifteen, perhaps.

Question: Do the hens which you feed lay some eggs?

Mr. Dyar: Yes, I get some eggs.

Question: Will you tell us the difference between the cost price and the selling price, if you get forty-five dollars per acre for your corn?

Mr. Dyar: Well, I got a cent and a quarter—about that. Sometimes I sell at an advance of a half cent, sometimes three-quarters, and sometimes a cent.

Mr. O. E. Bradfute, of Greene County: Mr. Chairman, I am convinced for one that we are on the edge of very thin ice. Those of you who have studied the history of the ensilage problem in the dairy, and know something about it, know through what they have gone. I am a firm believer that ensilage will be found useful to the steer feeder, but I want to utter a word of caution to each and every one of you to go slowly about making ensilage the sole ration. I believe that ensilage is a wise thing to mix in, but I can not speak from personal knowledge. I believe it can be used wisely if used only in the right proportions, but the man who undertakes to feed ensilage to beef cattle, and to make finished beef and go into the markets with it, and expects to reach the top of the market and does not feed anything else, I believe will be disappointed, and when he follows those cattle through the dressed carcass and sees the finished beef he will be still more disappointed.

Let us, then, if we are going to feed cattle, feed them wisely and not fall into the same trap that the dairymen did some years ago. We can use it profitably, I have no doubt, but do not undertake to make that the only feed, but have your other feeds and mix up so that you will give the animals a feed satisfactory to them and get satisfactory results. I do hope the farmers will not rush into this thing blindly, go into it haphazard, but go into it in a business sort of way.

Mr. Geo. L. Hyslop: In answer to the gentleman from Greene County as to whether an acre of corn will feed further if siloed than if fed dry, I would say that in my experience with a herd of dairy cows an acre of corn fed as ensilage was worth about three more than if fed dry. What it will do for fattening cattle I do not know, as I have had no experience feeding steers.

After several years of careful study of the feed question for my cows, with the information I could get from Prof. Henry's writings and other scientists, I took up "Wolf's Standards" and undertook to grow and provide a practical balanced ration for my cows without using ensilage, for I was prejudiced against the silo. In my test (and it was a thorough one) when corn was worth sixty cents per hundredweight, bran ninety cents per hundredweight, ground oil cake one dollar and thirty cents per hundredweight and clover hay and shredded corn stover five dollars per ton, my butter cost me 17½ cents per pound just for the feed.

A short corn crop, caused by drought, forced me to build a small silo to take care of the fodder, as only about half of the stalks had ears on them. In an account with this silage, with other feeds at the same price and with the same herd of cows, the butter cost 12½ cents per pound for the feed, or nearly one-third less than when the ration was made from dry feed.

Doctor W. I. Chamberlain: I think my friend, Bradfute, overstates the reliance which the dairymen placed upon ensilage. I come from a dairy country, as does Mr. Derthick, and they have never attempted to feed it exclusively. The trouble was to get enough ensilage, and the trouble was to get the clover hay. They balanced it very largely with the clover hay and with the bran and other nitrogenous feeds, the gluten. The question was to get the balance from the farm and not from the mill, and they did that through legumes, but I don't think any of them tried to feed ensilage exclusively; I don't know of any.

The thing is settled among the dairymen; no dairyman pretends to grow or to produce winter milk without large reliance upon the silo. There is the difference between twelve and one-half cents and seventeen and one-half cents in the cost of butter which the gentleman, Mr. Hyslop, has given. (Applause.)

Mr. George McKerrow, of Wisconsin: I come from the state of Wisconsin, and while I see a good deal of opposition here to the silo, I thought were I back in Wisconsin it would be just the opposite. One or two men would be opposing the silo while ten or twenty would be in favor of it. In fact, I think sometimes we get too enthusiastic over the silo.

In regard to what Mr. Bradfute has said in warning, I think his position is correct. We have had a good many silos in the state of Wisconsin for twenty years and we are getting more and more every year. The dairymen call them good things and some of the men who feed steers and sheep also call them a good thing. I was a little prejudiced myself, but I had the privilege of going into nearly all the silos in the state and studying the question of stock feeding. I grow carrots for my horses, sugar beets for my cows and turnips for my sheep, and after looking the field over I said, "I believe we would better have a silo." I get a succulent feed a good deal easier than I can in the root crops for horses, for sheep, for steers, for the beef animal and for the dairy animals.

I will say, with Mr. Bradfute, do not try to make your animals live on ensilage alone. There is ensilage and ensilage. I go into some silos and I find quite sour ensilage, because they rush the crop in too quickly and green; I go into others and find very sweet ensilage. I suggest that cattle on pasture should not be fed very liberally on silage. I think you could make animals live on it very well, but it is better when fed—as this gentleman suggests in his most excellent paper—with some other feed. One of our beef breeders has fed ensilage for twenty years, and one butcher takes all of his product and he tells me that it is the juiciest, best layered, and best marbled beef that he cuts on his block.

President Houskeeper: We will now listen to a selection by the quartette, after which we will stand adjourned until two o'clock.

A song, "Dinah Doe," sung by the Williamson Sisters' Quartette.

And thereupon a recess was taken until 2:00 o'clock P. M. of same day.

WEDNESDAY AFTERNOON SESSION,

January 13, 1904.

The State Farmers' Institute met and was called to order at 2:05 P. M. by President Houskeeper, who announced that the first on the program would be music by the quartette.

A song, "The Sweetest That Grows," sung by the Williamson Sisters' Quartette. (Applause.)

President Houskeeper: We will now have the report of the committee on nominations.

Mr. E. P. Snyder: I offer the following report:

"Your committee appointed to nominate officers for The State Farmers' Institute for the ensuing year, would respectfully submit the names of A. L. White, of Muskingum County, for President, and Lowell Roudebush, of Clermont County, for Vice-President.

"E. P. SNYDER,
"M. C. THOMAS,
"S. E. STRODE.
"Committee."

I move the report be adopted and the officers be declared duly elected.

Motion seconded and unanimously carried.

President Houskeeper: The committee on resolutions will next make its report.

Doctor W. I. Chamberlain: Your committee begs leave to present the following report with the recommendation that the same be adopted.

Resolved:

1. That, in national affairs, we heartily commend the rural free mail delivery as a great boon to farmers and to many city interests, and urge its extension so far as may be practicable.

2. Also, in connection with, and to facilitate the above, we urge judicious national aid in constructing and maintaining good roads of permanently hard material.

3. That we urge the establishment of postal savings banks, the adoption of a parcel post and of a postal currency system as being much needed by farmers and by newspapers, and by manufacturers of, and dealers in, many lines of merchandise.

4. That we urge the passage by Congress of the so-called Grosvenor Anti-Shoddy Bill.

5. That in state affairs we urge the passage of laws, requiring a certified statement of its analysis and composition to accompany each package, parcel or lot of mixed or compounded feeds, foods, medicines, tonics and appetizers, including all patent and proprietary medicines, sold within the state, together with rigid inspection of all such goods and enforcement of the law, by the proper executive officer or officers.

6. Also, as tax payers, we urge the passage of a law giving a definite salary to each county officer or official proportioned to population of county or business transacted, and that all fees received be fully and publicly accounted for, and all excess of fees, if any, be covered into the treasury of each county.

7. Also, we urge the passage of a judicious law giving state and increased county aid in the extension and maintenance of good roads, especially in those parts of the state where suitable metal or material for hard and durable roads is not locally abundant; such good roads being the greatest possible aid to the free rural mail delivery and the centralization of township schools.

8. That we heartiy commend the thoroughly efficient work of our Ohio Department of Agriculture along all lines thus far committed to, and undertaken by it, and we specially recommend the vigorous continuance of farmers' institutes, and suggest, with a view to their improvement, the establishment of an annual normal institute for the instruction and aid of state institute workers along lines similar to those recently and successfully established in New York, Ontario, Canada, and elsewhere.

9. That, in the revision of our school laws, greater encouragement be given to the centralization of country schools and to giving instruction in the sciences that underlie agriculture.

10. That the killing of quail be prohibited for three to five years.

11. That we urge liberal and judicious appropriations for the agricultural department at the State University, at Columbus, the Agricultural Experiment Station, at Wooster, the State Horticultural Society, and the State Board of Agriculture.

W. I. CHAMBERLAIN,
F. A. DERTHICK, } Committee.
O. E. BRADFUTE,

Mr. C. G. Williams, of the Ohio Agricultural Experiment Station: It seems to me that there is one of the resolutions that probably ought not to be adopted as written, and that is the one favoring a state salary law for all county officers. The county officers differ in their functions. The county commissioner is an officer who does business for the inhabitants of the entire county; the prosecuting attorney is the same. The county clerk, and the sheriff and the recorder and the probate judge perform duties for particular individuals. When a person takes a deed or a mortgage to the recorder for record he pays the entire cost of recording it; it is not a matter of general interest except that the fee should be just sufficiently large to afford him adequate compensation. The sheriff performs duties for litigants; the county clerk performs services for litigants, but not for the public at large. I think there are two classes of county officers, and that they should be classified, some put on salaries and some on fees.

In regard to one other provision, that is, in regard to the analysis of foods: There ought to be an exceedingly stringent penalty for selling goods that do not conform to the analysis. It should be made the same kind of a crime as obtaining money under false pretenses. That is simply what it is. When they represent a package of goods as containing certain elements and it does not contain those elements it is simply obtaining money under false pretenses and should be punished accordingly.

But it seems to me that that salary provision should be split; where the functions are general they should be placed on salaries, but where their functions are particular and specific for people that have occasion to use them, then they should be on fees. I might illustrate it in this way. Suppose we should place all the plumbers in the state of Ohio on salary; they do plumbing only for particular individuals; that is simply an illustration.

Doctor Chamberlain: The resolution does not interfere with the fee system; it meets the objection of the gentleman exactly. The fees will be paid in as before, but instead of going into the pockets of the officer who collects them they go into the treasury, after a reasonable salary of the officer has been paid.

In the matter of publicity, if the public could but know the salaries that are received in Cleveland, Cuyahoga County, and Hamilton County, there would not be a question on the passage of this law. The fees may go on as before, but the surplus of any of such fees above the payment of a reasonable salary to the officer should go to the public, to the taxpayers, not to the treasurer or the clerk, or the sheriff or the county auditor. (Applause.)

Mr. Williams: We have an experience right here in the city of Columbus on that particular point. About eight or ten years ago the justices of the peace of the city of Columbus were placed upon salary, and all the fees of their offices were to be turned into the general expense fund of the city of Columbus. Before and during the first year, when that law went into effect, the justices of the peace, being in the habit of collecting their fees, turned into the treasury a handsome surplus over and above their salaries. At present their collection of fees amounts to practically nothing; their salaries, however, go on just the same. That is an actual experience, and I expect that the same thing would hold good in the matter of the collection of fees by county officers, having no interest particularly in their collection. I fear that would be the result.

Doctor Chamberlain: Mr. Chairman, I do not believe there is the shadow of a question in the minds of any one but that it is simply an outrage to turn all of the fees into the pocket of the officer. I do not believe there is a shadow of a question that we shall be more likely to remedy this thing if we try to do it than if we sit down and say we can't do it. (Applause.)

On motion of Mr. Lowell Roudebush, the resolutions were unanimously adopted.

A member: It seems to me we ought not to stop just here. There has been no provision made to bring this matter before the legislature or before congress. I, therefore, move you that a copy of the resolutions pertaining to national legislation be sent by the president and secretary of this association and forwarded to each of our United States senators and to each representative in congress from Ohio; and that for the resolutions pertaining to state legislation a committee of four be appointed to see that these matters are brought before the state legislature in proper shape.

Motion seconded and unanimously carried.

President Houskeeper: I will announce the committee later.

I want at this time to introduce to you the President of the Ohio State University, Doctor W. O. Thompson. (Loud Applause.)

REMARKS OF DR. W. O. THOMPSON.

Mr. Chairman, Ladies and Gentlemen: I appreciate very much the courtesy of the president, and your courtesy as well, in being willing to listen to me for a moment.

I am very much pleased to come in after these resolutions and in a way second the resolutions and second a number of particulars in the resolutions. If I were to specify the things that are particularly of interest to me, perhaps I should mention first of all the reference to the common schools. And in that connection I wish, almost, that there had been added a resolution that would encourage more liberal state appropriations for the common schools. In the state of Ohio the facts are now that conditions have changed completely from what they were twenty-five or thirty years ago. Twenty-five or thirty years ago some counties in this state were paying out more than they were receiving and helping other counties. Those same counties now are paying out less than they were and are receiving from the other counties; what was a very rich, productive portion of the state for public school purposes is now a poor portion of the state. One of the chief things of Ohio has been the cosmopolitan character of its citizenship. Recently the tendency has been to make the public school a local issue, and I hope that day will never arrive. For the past fifty years or more we have been paying one mill on the grand duplicate from the state treasury into the local treasuries again for the support of the public schools. The proposition has yielded about one dollar and fifty cents per capita for the enumerated school youth of the particular districts. It is expected to pay about one dollar and seventy cents per capita this coming year. But the school men of the state generally feel that the district schools in many places are entirely inadequate. If I had time I might go on and name the districts in Ohio today where a six months' school at thirty-five dollars a month will consume all the money that will be raised by the duplicate at the maximum under the law.

There slipped into the legislation of the last Legislature a provision that the county auditor should get one per cent. of the public school fund for the mere handling of it. That was a thing that the school teachers did not know of or they would have protested against it.

A number of provisions this year in the Legislature will be seconded, for the interests of the common schools largely by our farmers, in that the public schools shall have increased care, and that there shall be a state system of public schools rather than a local system. That is to say, I want the sentiment in the state to maintain our historic position in that regard and to improve it rather than to recede from it.

I am very happy, too, in another feature of this report, concerning a normal institute for farmers. I had some conversation with our friend who left us this last year, Professor Hunt, on that matter. I saw over in New

York that they pay the people to come to those institutes, and I was rather glad of the opportunity to poke him in the ribs and remind him in Ohio the people came to hear him, but when he went to New York he had to pay people to come and hear him talk. (Laughter.)

However, this has nothing to do with the organization of the normal institute. I think that matter will be taken up. Already I have communicated with the secretary of the State Board of Agriculture and stated that the Ohio State University would be glad to co-operate so far as it was possible, and I am quite sure Director Thorne, of the experiment station, will do the same. It occurs to me that that sort of institute should be under the direction of the State Board of Agriculture and that a specific appropriation by the state legislature should be made for such purpose to the State Board of Agriculture. I hope, therefore, that this part of the resolution will be emphasized.

I am of the opinion that our farmers' institutes are a source of great good to the state, but they are not, like all other things, the best things in the world, and they may be made better and more efficient. I hope, therefore, that the outline of this plan, perhaps in conference with the persons representing the State Board of Agriculture, the college and the experiment station, shall be one that shall not be a mere copy of what is elsewhere, but a realizing of the needs of Ohio and an attempt to bring our institute work into the forward march, toward the most efficient service of which this state is capable, making its work to be commended as well as commendable.

I am very much obliged to you, gentlemen, also for your kind expression concerning the college of agriculture in the Ohio State University.

I shall not speak at great length upon that matter, but I suppose you will pardon me if I should say something about the college of agriculture in the state of Ohio, inasmuch as this is a farmers' institute, and it is a line of work in the state university in which you are most interested as farmers, and in which you are interested as the fathers of sons and daughters.

The college of agriculture in the state of Ohio may not be known to most of us to be as efficient as it really is.

Cornell University, which has called away our beloved Professor Hunt, at a good deal more money than we are allowed by law to pay—and for which we can not blame them nor him—is not a larger institution in numbers than the Ohio State University in its college of agriculture; in the college of agriculture in that institution there are more students in agriculture than there are in the state of Ohio oftentimes, but there are fewer students in what we call the four year course. We are one of the leading colleges of agriculture in the country, in this, that our boys come and maintain themselves through a period of four years. They take, therefore, more agricultural education, and the work that our boys are doing after they graduate is proof of the wisdom of that policy for Ohio conditons.

We do not think we have worked out the last question in agriculture, and we are planning to do some better things. We have a feeling all over the country that we ought to do something more.

It may not be known to you gentlemen, but it is the truth when I say that agricultural education is the most expensive education; it is more expensive than the technical education; it is more expensive than the ordinary general literary education, and, therefore, when we assume to do that sort of thing we are assuming to do an expensive thing. It would literally scare you people to death if you knew that the college of agriculture this year requested more money than the entire income of the university and what is more they have made a good case of it, and the trouble is that the most of it is needed, in my judgment.

I was a hired hand on a farm for seven years and I know what it means to be on the farm, and I have a foolish notion that the college of agriculture ought to work under reputable conditions; I have always thought we ought to have decent fences on the college farm and I have always thought we ought to have some typical stock on that farm—various kinds of stock; I have always thought we ought to do some things which could be seen by the students of agriculture which would stimulate them to do their best when they returned to the farm.

We, in the last two years, have spent a few hundred dollars in the purchase of live stock. We ought to do something more than that. We have not reached our maximum. We have a farm of two hundred and thirty-five acres. We happen to be located right in the edge of the city. The time now is when we could probably enlarge our borders; ten or fifteen years from now we shall not be able to do so. It will not, therefore, do to think of 1904 and 1906. We must recognize the fact that this college of agriculture will be here long after we are dead, and that we are doing not only for the agricultural institution of Ohio now, but fifty years from now. I want to do anything that we do so that the next generation need not be ashamed, and need not be continually amending it.

Townshend Hall is the first really strong building of the college of agriculture; it is not the largest in the United States, but it will always be a good, well-adapted building for the purpose, and if it does not grow too small, will always be satisfactory for what it is.

We had the experiment station there at one time and we have that old building for forestry. It is not as good as thousands of residences in the city of Columbus, either in size or convenience. That building is entirely too small; we ought to have a building worthy of the movement. You never will do any great thing for horticulture or for forestry in Ohio unless you have the equipment with which to do it. We believe we are doing what could be expected of us, reasonably, but we ought to be better equipped in that regard.

The house that we use for the department of botany—and that is one of the sciences that lie close to the matter of agriculture—is accommodating approximately, now, seventy-five thousand plants of one sort and another. A considerable portion of that collection could not be duplicated at all; another considerable portion of it could be duplicated only at great expense, and some of it could be duplicated at moderate expense. If we should lose that entire collection today it would cost as much as the building is worth—and more—to replace the collection. The building has been outgrown and is no longer adequate.

These are some of the things that we want in order to develop the college of agriculture in some definite lines. For example, we want to do something in the line of animal husbandry. We think the live stock interests of the state would appreciate it. The coming of Professor Plumb to the institution was a hope in my heart that within the next three, four, five or six years we should be able to do something that would be worthy of the live stock interests, and worthy of the college.

The department of horticulture and forestry must be developed or abandoned. If it is not developed it really ought to be abandoned, for what we are doing now is not worthy of the state and it will not be worthy of it ten years from now. That is to say, the same question of forestry to which the governor made reference in his message. I do not know why he did it, but he must have had in mind the talk of some farmer. At any rate, we ought to do something more in that line than we are doing.

We want to have a department of farm mechanics and agronomy—the study of crops. These are things which must grow.

We have done something in the department of dairying; we think we have been of some service.

It so happens that the university is made up of a half dozen colleges. In the college of mechanic arts, or of engineering, we are carrying nine lines, preparing more than seven hundred engineering students on that ground today.

It was said when we should have four hundred students we would put up the salaries, but the students have grown to more than eighteen hundred and the salaries are where they were years ago, but that is simply because the growth has been so unusual the revenues would not meet the demands.

I am on my fifth year as president, and in these four years we have gone from a little over one thousand to beyond eighteen hundred and our revenues have had simply the expansion which comes from the expansion of the duplicate—in other words, about ten or fifteen thousand dollars a year in the way of expenditure. There is not a college in this state with ten or fifteen thousand dollars doing the work that we are, and yet we are engaged in trying to give technical and scientific work, such as is not paralleled anywhere within five hundred miles.

We have tried to do what we could with what was at hand. The matter of expenditures one of these times will be taken up by the farmers. The state levy is one and thirty-five hundredths. There is every reason to believe that the state levy will be decreased; it is the hope of the state officials that in time it may be abolished entirely, but before that can be done the revenues must be increased by about two and one-half million from the indirect sources of taxation. This present Legislature will turn its attention to the development of new sources of revenue. The last Legislature produced about two millions, and it reduced the levy you know more than one-half.

The time is coming when this state university will not rest upon the state levy, but it will rest upon the general revenue fund. At present we are getting fifteen-hundredths. The law provides that that shall be decreased to ten-hundredths at the end of this year.

In our state in this opening period of the Twentieth Century the time seems near when the principal amount of taxation will be for local purposes and the state levy will be done away with. When that time comes—and I think it will come in the next three, four, five or six years—the tax levied will be for local purposes and there will be nothing for the state revenue. The corporations and the franchises and the excise tax and all these various things will pay the state's expenses. But they do not want to be taxed for two purposes—they are as much opposed to double taxation as is the farmer. So that we say to you as farmers, now, while you have the chance to pay taxes for an agricultural college I hope you will, for the time will come when you won't have the chance—aye, the time is here. So we do not have any hesitation about saying to a company of farmers, that this instituion established thirty years ago, running for thirty years, started out with seventeen students, and thirty years from that time had a great deal more than seventeen hundred students is worthy of support. That has been the growth of the institution, quite beyond the expectation and hope of anybody. The institution ranks about fifteenth in the United States in point of attendance, and it ranks higher than that in point of some other virtues. We recognize that it ranks away down on the point of resources. Last year the state gave to the university of Illinois one million two hundred and fifty nine thousand dollars for the two years coming. In addition to this it had its revenue from the Hatch act and the second Morrill act; so that they have a revenue of well up towards eight hundred thousand dollars.

The question of investigation, as related to the agricultural interests, is one in which we are engaged actively, and we think there ought to be in this state a most active co-operation on the part of the farmers.

The experiment station is doing some work under what is known as the agricultural students' union—some very valuable work in the matter of experimenting locally over the state. And if I have the right idea in my head about it, the agricultural college hopes one of these times to be able to co-operate with the experiment station along agricultural extension work. We have done something in teaching the science relating to agriculture and we hope to be able to take up agricultural extension work in the university. It will arouse interest in the district schools in this state. We have not given the attention to these schools that they deserve, but it has our most hearty endorsement, and as soon as our funds are sufficient we will put it in and it will not be an experiment, but will be an assured success from the very day of its establishment. That is one of the lines of extension work in agriculture to which we are looking forward.

I ought to speak, I think, of the domestic science work; I ought to speak of that department as of interest to the young women of our country; it needs to be recognized.

You know it is said "Man's inhumanity to man makes countless thousands mourn," and I sometimes think the women, too, are the women's worst enemies. In other words they have taken years and years to understand that agricultural education is worth while for young women, and we have not yet gotten the women of the country to understand that domestic science education is worth the while of the women. We have in substance the same struggle there that we had in the agricultural college about agricultural education; but agricultural education has vindicated itself; it has proved its right to be; it has proved its value and it will do it more and more in the years to come.

We have this question in the department of domestic science, but the women in that department are doing large things for making home life profitable and womanhood more dignified and more respected at home. We believe in the one as much as in the other and we hope that the farmers of the country will recognize the fact that their daughters educated in these lines are as well educated as in the other lines.

I have frequently said to people who have asked me what course their boys should take, "Take the agricultural course." "But he doesn't want to be a farmer." I say, "I don't care what he wants to be, the agricultural course is a good course, as good a course as we offer in this university." Whether he is going to be a farmer, or a doctor, or a lawyer, he will get an education there that will help him in his growth and development and that is what he needs. There is not anything about agriculture that is not worthy of being known by any man in any calling of life. (Applause.)

I seem to be with the majority here, but I want to tell you I am in the minority the most of the time on that proposition, but I am still fighting on, because I believe what I believe; and, therefore, I urge interest in the college of agriculture and domestic science in the university, that they may not lack favor, and when it comes to your claims it will have as much respect there as it is worthy. Ladies and gentlemen, I thank you. (Loud and long continued applause.)

President Houskeeper: The next number on the program is an address, "The Social Rights and Duties of Farmers," by Mrs. J. W. Bates, of Broad Ripple, Indiana. (Applause.)

THE SOCIAL RIGHTS AND DUTIES OF FARMERS.

Mr. Chairman, Ladies and Gentlemen of Ohio: Garfield has said it matters not so much at what school you are educated as it does how you are educated. Influence, education and opportunity are the three principal factors in the broadening and expanding of the social side of the farmer. You as a class of citizens are the most law-abiding people in the land; your mercantile pursuits are among the most honest of men; your wives and daughters have the utmost confidence in your counsel and advice and they are the purest women of the nation; and as a consequence you have not given your time to think of the momentous influence that you daily exert over the social world. Perchance you have been in a lethargy; you have failed to hear the cry of the widow in her secret mourning; you have failed to feel the pangs of hunger from the gambler's child; you say you are not directly under the influence of Tammany Hall; you are not directly risking your all on the Chicago wheat market, and yet does that relieve you from forming the foundation of the greatest emancipation of men that may exist today?

You ask, Where shall this emancipation begin? I reply around the old hearthstone. Strip your information of technology and place it in such terms that the children can understand it and you have achieved a victory.

Three illustrations am I going to give to you, plain, practical and simple, as they may be.

You have in your midst today a gentleman who has world-wide reputation for his horticulture and for his apples—Doctor Chamberlain. When he wants to plant his orchard, he first selects the location; he has a certain place to plant those trees; he then selects a certain kind of fruit; he selects the very best of fruit, and the very best of nurserymen. When those trees have been selected, he does not trust to the third individual to place those trees in the soil; after those trees have begun to grow and in the tender years, before bearing, he does not trust to a third individual to prune those trees; he goes out there himself and as tenderly as a mother would rock her babe, he prunes those tender twigs.

The gentleman this morning who spoke to you so eloquently in behalf of the horse no doubt would tell you that he himself does not trust the third individual to train that animal that he loves so dearly. When that animal is in the early stages of its life, as you all know, he placed the halter upon it; he guided it; he petted it and broke it as gently as he possibly could to become the animal that he wished it trained to be. There was no third individual allowed to train that animal.

And when you wish to hire a hand to plant your corn, to sow your wheat, do you inquire what knowledge he has had? But of course you do; you want a man that is experienced; that knows his business. You would not want a man who was a novice in farm work to go into the field in the early spring season when you are busy.

But when you send your children to the public schools do you inquire if the teachers are thoroughly in sympathy with child life; that they have the ability to bring out the best that is in the child; to correct its faults and to mould it morally as well as intellectually? No, you trust to the trustee for that. It is all well enough for you to have that confidence of the said official, but which is of more importance, the planting of your orchard, the planting of your grains, the training of your horse or the training of your child?

We are surrounding our children today with environments that have a tendency to dwarf and narrow their mental conceptions. It is a wonder to me sometimes, as I have traveled the busy marts of the east and the west and the north and the south, as I have watched the little narrow, gnarled, dwarfed forms dodge in and out away from the policemen on the corners, where do as many noble boys and girls come from.

I was in a home not so very long ago where the mother had four sons, beautiful little fellows, and as they played around her knee as she was preparing the evening meal, the youngest was getting a little peevish, as he was sleepy. That mother's heart was heavy with the day's work; no doubt her back ached from the day's labor that comes from every honest toil. But instead of being patient with the child she pushed him to one side and said, "You are the meanest kid I ever saw." I never heard her speak of that child in any other terms; it was served to him morning, noon and night; it was a little prayer that was said at his bedside at eveningtime; it was the luncheon that was served to him at the noon hour. And as I saw that little begowned figure climb that old stairway, and as I saw him at the landing, turn around and look at the mother, in fancy I could see him go to his little bed and no mother came, and when the stars looked down to him so tenderly, he wondered who it was that kissed him so lovingly, and in fancy the next morning I could see the little fellow come down the same old stairway in his little gown and I could see him cautiously slip up to her and say, "Mother, an angel kissed me last night."

That is no idle fancy of an artist's brain, placed upon canvas to be gazed at by the idle throngs that pass by. That is a reality and actuality and it is being enacted in thousands of our homes today.

Do you realize, friends of Ohio, that your reformatories are full of boys whose home training has been just such as the one described? Do you realize that that boy is placed there with different temperaments, with different nationalities, with different dispositions, from the shrewd, sharp-eyed boy that cheated from his first game of marbles, to the little dirty, ragged, rosy-cheeked urchin that stole the apples from the merchant's barrel standing upon the sidewalk?

It has ofttimes been a query to me in my mind which of the two is the greater evil: for the boy to do the act of theft, or for the man to place the temptation before the boy. The will power to overcome temptation must be cultivated the same as all other virtues; therefore how can you expect those virtues to be cultivated without the necessary encouragements.

When Garfield went to Willams College he wrote to a friend it was practically to be under the influence of that marvelous character, Mark Hopkins. Jesus of Nazareth craved human sympathy, again and again; in dark Gethsemane did He turn from communion with the Heavenly Father to the chosen three, but they slumbered on; and the hungry heart of the loving Saviour received not the encouragement that it craved.

Society is responsible in a great measure for so many criminals. They drink the froth and foam of evil gossip and do not stop to weigh the full value of manhood. We have petted and fondled the society man until the English cousins recognize a full fledged brother in the American dude. A few years ago The Ladies' Home Journal published illustrations of the "Brownies." Among the Brownies was one little fellow that was called a dude. My baby girl of three was lying upon the floor one day and she looked up at me in all her childish simplicity and she said, "Mother, tell me what a dude is," and I frankly confessed I never had words in my English vocabulary to thoroughly express my indignation of that individual. (Applause.) My older daughter looked up and she says, "Sister, I can tell you what that is; that is a man that wears a coat split way up the back and a hat way up in the air." (Laughter.)

What the farmer needs is to use his brain; to think; to have his brain educated far more than his brawn. The farmer today who is making farming a success, both financially and scientifically, is the man who is studying all the time. The man whose ideal is reached at the age of thirty years is an entire failure. Let your ideal, young man, be so high that you will never reach it until death comes to you. The man who is a success today is the man whose ideals are pointed so high that only hope will ever dare him to aspire. We must not pull the ideal down to us, but rise to it.

The farmer needs more clubs, more reading circles, and more organizations to foster the development of his work.

Some say, oh, but it takes so long to reach our ideals. Your ideal will never be a worthy one unless it is worthy to strive for. "Reign, and keep life in this our deep desire—our only greatness is that we aspire."

Think of all the great successes of life. Gray was seven years in writing "The Elegy of a Country Church Yard;" George Eliot read one thousand books before she wrote "Middlemarch;" Webster was forty years in the writing of the dictionary; Lyman Abbott was complimented one time upon a sermon and asked how long it took him to prepare it; he replied "forty years." Bryant wrote Thanatopsis one hundred times and wept bitter tears because it was no better.

So you see the great achievements of life have only been through great experience and high aspirations.

Another evil that we as parents are allowing to exist, is not teaching our boys and girls the needs and responsibilities of marriage. It is the ambition of every normal man and woman, when they reach mature years, to have a home of their own. A woman has a right to three H.'s—Husband, Home and Happiness. We have men and women today who are devoting their years, their fortunes, and their lives, to the advancement of live stock, to the cross breeding, and the putting fat on the beef animal and developing the dairy cow; but they are not giving any thought at all as to the physical development of their girls and boys. When they wish to get married, there is never a question asked if there is tuberculosis, insanity or any other of those diseases in that family, and then they wonder why the cemeteries are filling up so rapidly.

Then there is the beautiful, high-spirited, well-educated girl who plays the musical instrument, who paints the flower upon canvas, who hears the birds sing to her, "The flower is all in all," and who marries a man of entirely opposite temperament and disposition. To him "it's a yellow primrose by the river's brim. A yellow primrose it is to him, and nothing more." He may be her equal socially, mentally and morally, but there is not that bond of affinity between them that God intended should exist to make marriage a success. They seek the divorce courts, and the question is asked why, and we shake our heads and say it is too bad. It is too bad, my friends, and it is a blot upon the American nation today, too.

Has the time come when we must sacrifice our daughters at auction to the highest bidder? No. Has the time come when we must exchange our womanhood for the depraved aristocracy? No.

Then who are the ones to place this reformation before the public eye? It is the farmer. Whose hand is it that is felt today to sway the greatest influence anywhere upon the globe? It is the farmer. Whose hand is it that fills the hold of the vessel that plies the mighty deep? It is the farmer. Whose hand is it that fills the haversacks of the boys over in the Philippines? It is the farmer.

Then, my friends, it is your right to be an American, but it is your duty to stand by the teaching of Americanism. (Applause.)

I can only illustrate this to you by a story that I think comes in well. A number of years ago there was a severe storm on the coast of Lake Michigan. A number of fellow university students were out in a boat when this storm came up. Some of the students stood on the banks of the shore and saw the fellow friends go down into the waves; the old seamen feared to go into the angry deep. At last they saw five boys hanging to a piece of wreckage. One of the number of lads who stood by recognized those boys as his college friends. He stood it just as long as he could and at last he said to one of the old men who stood by, "Put a rope aroud my body and let me go." They interfered, but the boy was anxious. He says, "There are five lives there and only one here." They put a rope around the boy's body; he went out and brought four in amid loud cheers; when he started in with the fifth one a large wave came and washed him and tossed him backwards and forwards in the storm's fierce gale, and as they drew the rope in hastily they brought in poor Tom. His head was bruised, one arm broken and he was unconscious. He had saved five lives, but almost gave his life or them. They took him to the hospital and he was well cared for. In a few days one of the friends whom he had saved rushed in with a paper that had an immense picture in it showing the storm and the wreck and at the head of that picture was the picture of the fellow who had saved the boys' lives. And the fellow friend rushed in and as he held up the picture he says, "Look, Tom! Look! You are a hero! A hero, Tom!" Poor Tom, lying there on his couch, his head all bandaged and throbbing and aching with pain, wearily turned it upon his fellow friend and said, "Tell me, Dick, did I do my best? Did I do my best? If I didn't do my best don't tell me that I am a hero."

And, my friends, I leave that with you: Are you doing your best? Put your ear to the wonderful storehouse of human nature, pick and clean the rough nuggets that are presented to you and success is yours, for liberty is never so valued to the criminal as when he stands behind the prison bars and kisses his aged mother good bye. Life is never so sweet as when we annually pass each milestone and look out beyond and see the shadows are falling thick and fast. Character is never so appreciated by any of us as when it passes us as a golden age.

Go to your many homes, thankful in your hearts that you have your pigs in your stys; that you have your grain in your granary. But be far more thankful that you have your children around you and their mother to comfort you in the days that are to come. And as we "pitch our moving tents one day's march nearer home," then it is we realize the meaning of living lives of integrity honesty and sobriety.

These are the rights of the American, but it is your duty, my fellow farmers, to stand by the teaching of the Anglo-Saxon race. I thank you. (Loud and long continued applause.)

President Houskeeper: Surely we have all been well repaid for being here this afternoon.

Mr. Geo. E. Scott, of Jefferson County: I understand the lady has to leave here this afternoon. I think we could no better show our appreciation of the good she has done than by a vote of thanks; and, therefore, I move you that we extend to Mrs. Bates a vote of thanks for her paper this afternoon.

Mrs. Lee: Mr. Chairman, I second the motion.

Motion unanimously carried.

President Houskeeper: The next number on the program is "Sheep Husbandry," by George McKerrow, President of the Wisconsin State Board of Agriculture, and Superintendent Farmers' Institutes, Madison, Wisconsin.

SHEEP HUSBANDRY.

Mr. President and Ladies and Gentlemen: Up in Wisconsin, where I live, it is the custom to have the dessert at the close of the meal, but I see down here in Ohio you have the dessert first at your state farmers' institute sessions. It is worth my while to travel all the way from the state of Wisconsin to hear the lady utter the sentiments to which you have just listened (applause) and it makes it somewhat hard for me to furnish a portion of the solid part of the repast to satisfy after such a dessert. However, I will do my best to furnish you a little Wisconsin experience with sheep as a money maker.

At home they call me a "sheep crank." And sometimes they say that I am noted for prying into other people's business. This afternoon I first propose to pry into the business of the farmers of Ohio to some extent.

I will ask you, all of you, in this audience who are interested in sheep husbandry to please raise your hands. (In compliance with the request of the speaker about twenty so indicated.) Oh, there is a grand, sensible lot of people in the state of Ohio. I do not mean to intimate by that that those who did not raise their hands are not sensible.

I am one who believes that in every line of life we first should study our conditions, our likes and our dislikes, and then adopt that line of work that will suit our conditions best, and when we have adopted it, stick to it right through thick and thin, up hill and down hill. Because all these things have their ups and their downs, and the person who is forever shifting from one thing to another is always down. That is, he sells that which is cheap because it is not profitable, to buy that which is dear because it is profitable, to multiply it and get a goodly stock on hand when it becomes cheap, to sell again. He is always selling on a low market, buying on a high to sell again on a low; therefore, the man who sticks to sheep, to horses, to hogs, to dairying, or any other line of work, right along, is the one who succeeds.

I live in a state that is something of a sheep state. We are proud of the record of Wisconsin in the production of her flocks. We are proud to say that Wisconsin is the only state that at the great international shows held during the past four years in the city of Chicago has been able to meet our brothers from across the line, in Ontario, and hold our own.

I am satisfied that you have conditions in a large part of Ohio which are suitable for the production of high class sheep, because in my thirty-five years of experience in the sheep shows of this country I have sometimes met Ohio flocks that made me think you could produce good sheep in Ohio. (Laughter.)

I hardly know along what line to talk this afternoon, because while I pried into your business a little, I am not as familiar with your conditions as I should be to talk to you intelligently and for the best good of your assembly. Therefore, Mr. Chairman, I will try and make my talk short and then you can get back at me. My good wife says that before I went out to talk at farmers' institutes she could get a chance to talk half of the time, but since I have practiced so much on the people she can't get a word in edgewise. I am far enough from home so that she won't hear this, but she advises me sometimes to let the people talk back, the way she would like to, and I believe the best part of a farmers' institute is the talk back part.

When we used to discuss the sheep question at farmers' meetings, many of those discussing it used to make it their business to try to show what a failure the beef business was, and the dairy business, and every other line of live stock work, and then after burying all classes of live stock, plant the sheep on top of the grave—but I am not going to do that. When we used to discuss sheep husbandry we discussed it from the wool standpoint. Those were the days when we were getting thirty, forty, seventy-five cents a pound for wool; but today we will discuss it from the mutton point of view, because we find in Wisconsin that we get the most profit out of our flocks through the income from the mutton side of the flocks.

You may think I am here to tell you just what particular sheep you ought to breed down in Ohio. No, I am not here for that purpose. I do not attempt that, even up in Wisconsin.

There are many good breeds of sheep. It remains for every man going into the business to first study himself, study the conditions that surround him, study his farm and the markets he will supply; study the different breeds of sheep, and select that best adapted to his peculiar needs.

I found it hard enough for me to select the young lady whom I thought would be the best partner for me, but it was a good deal easier than it would be to proceed here, without knowing you, to select some one for all you gentlemen here today—for I judge you are nearly all bachelors by the scarcity of ladies in the audience. (Laughter.) Probably you are in the same position as I am; you have so much to do and your wives are better farmers than you are, and you have left the wife at home to run the farm, and you come up here to tell her experience, and claim it is yours. (Renewed laughter.)

If you select a breed of sheep, get those that will suit your conditions and that you like—there is a good deal in liking any particular class of animals. Next spring when your neighbor comes along and says, "Why, Smith, your flocks don't look right; your lambs are scrawny, and your ewes are losing wool; you ought to take the breed of sheep I have; my sheep look better than yours." And then you would say, "Well, there was a fellow that came down from Wisconsin and he thinks he knows and he persuaded me this was the best breed and I bought them." But I say if you select that breed yourself, especially if your wife and you have differed about the breed, you will say to that neighbor, "The breed is all right, but I am a novice; I have not the right kind of feed; I have not fed them properly, but wait another winter and I will grow alfalfa and clover and I will have some roots, and I will feed a little grain, and I will show you I have just as good a breed of sheep as you have."

Maybe you think I am advising you to go into pure breeds. The average farmer should take the best stock that he can buy, or the breed that he has, and aim to grade up the flock. At the same time you are grading up with the Oxford, the Southdown, the Shropshire, the Cotswold or the Lincoln, be sure that you do not forget to give them the proper feed too.

If you have started out to make a success of sheep husbandry or any other line of live stock work, you must think of the feeding, as well as the breeding.

It is a common adage among the breeders of pure bred stock that the sire is half the herd or flock. I am here to say that is true when you are breeding pure breds; when both sides will have equal influence upon the offspring. But I am here to say that is not true when you begin to grade up the flock of scrubs, without any breeding. Then that sire becomes more than half the herd or flock so far as breed improvement is concerned. He is all and, therefore, you should use your best judgment in selecting that sire. You should develop the judgment, first, before you select, too. You should have a picture on your brain of the ideal animal that you want to have to head the herd or flock.

I would say in regard to the breed selected, don't go out and look up the largest individual; don't take the smallest and most effeminate one, but take a happy medium of the breed in size and of smooth conformation. For my part when I go to select an animal I first look for indications of thrift—constitutional vigor in that animal. I want a large nostril and good width between the ears; I want a large girth and full chest where there is plenty of lung room. Then I always look to their dinner basket. I have always looked at an animal to see that it carried a good dinner basket. See that the side line and lower lines and the top lines are straight; and see that the ribs are well sprung. There should be a bright pink skin on your sheep and a class of wool that is lustrous to your eye and soft to the touch, whether it be coarse wool or fine.

Why so particular about its outside covering? It is simply a continuation of the inside covering and if the outside is healthy and the wool is all right you can make up your mind that the inside is healthy and that it has good digestive and assimilative powers.

Do not buy an animal of a man that feeds very much condimental foods. A critical time in the life of every flock is when you change in the fall of the year from grass to dry feed, and again in the spring when you change from the dry feed to the grass. That is where the ensilage about which the gentleman spoke this morning is very valuable.

A great many sheep are allowed to run down in the fall of the year. You do not notice it; they look well because they have the big overcoat on and you cannot see it. You must learn to catch your sheep and handle them; you must learn that in order to know the condition of the sheep.

If you make your sheep run on old frozen pastures too long you will find them shrink, and when a sheep has once shrunk he won't respond to feeding as will one who has not been trying to get nourishment out of this dry, frozen grass. Your blue grass pasture, even after it is frosted, is a fine place for your flock of ewes to run, but give them a little grain as well, clover or alfalfa hay at the same time, and then you will bridge them over. And then in the spring feed them some grain until the grass is full of nourishment.

Ticks and lice are eating up thousands of dollars' worth of feed this winter. This is so up in the state of Wisconsin, but I hope it is not so in Ohio, just because our flock-masters have not dipped their lambs to kill the ticks; and have not dipped their sheep to kill the lice.

I believe the Lord intended tobacco to be an insecticide. In fact, that is the reason so many of you smoke so much—just to kill the microbes or bacteria. (Applause and laughter.)

But in my tobacco dip I found in boiling it up I could not tell just when I got the tobacco dip strong enough to kill the ticks and their eggs or gnats and make a good job of it. But you can get proprietary dips at a reasonable price. You can borrow your wife's wash tub and you can dip your lambs. I borrowed my wife's wash tub and didn't clean it out. The second year and the third year I made a tank. (Laughter.) You can get an oil barrel and saw it in two. In the dipping of lambs you have to have enough dip to dip the last lamb. We don't want to waste any up in Wisconsin; we are not as well off as you are where the people can afford to leave corn stalks to waste in the field, as I saw this morning. This dipping is to be done a few days after the sheep are shorn.

When I get through dipping the lambs I sprinkle the old sheep with this remaining dip—you see I save the dip. They are crowded up close together and as they feel it falling on them they try to get away and just rub it in. It is a very economical way. (Laughter.)

You may say you have talked about the outside parasite, but what about

those on the inside? Yes, there are a great many lung worms, stomach worms, tape worms, and there are different treatments for them. When I am in England I often talk to the flock-masters about these worms. In find this in England: That wherever they hurdle their sheep, leaving them just sufficient pasture for each day, and a fresh piece to be pastured the next day, they have no worm trouble. I have practiced that for a few years myself and find there is no worm trouble, and I believe the time is coming when the farmers on your high-priced lands and the farmers of southern Wisconsin on our high-priced lands, who breed sheep, will hurdle the ewes and lambs and you will keep them clear of worms in that way.

I think I had best stop talking to you and allow the audience to ask some questions.

President Houskeeper: We will allow ten minutes for questions.

Question: What do you think of sheltering the flock?

Mr. McKerrow: A great many of our farmers in Wisconsin shelter them too much. The flock does not need very close housing and will be injured by it, because the sheep has a good overcoat of its own.

Question: If it is kept dry?

Mr. McKerrow: If it is kept dry; shelter the flock to keep them dry, and out of the winds and drafts.

Question: Did you ever have any trouble with the lambs having parasites where they are on fresh set pastures?

Mr. McKerrow: No, sir. You can avoid parasitical troubles by having fresh pastures; to some extent you can have it by resting those pastures; put your cattle on one year and the sheep the next year. It is the lamb that these parasites trouble the most.

The Questioner: It has been my experience that I have never had any trouble when they run on freshly set pasture.

Question: How do you shelter in the summer?

Mr. McKerrow: Well, shelter in the summer is a very good thing, and anybody that is hurdling can have a shelter. I noticed that some of the English farmers put up a light frame, and covered it with tarpaulin, and put it on sled runners and haul that along as needed.

Question: At what age do you market your lambs?

Mr. McKerrow: The great bulk of our lambs are sold for breeders, such as are not fit for sale, as breeders are killed at home. About a third ought to go to the butcher, and we market those whenever they are in good condition or the market is good. When we were breeding lambs for market quite largely, we sold a good number of our lambs on the June market, because our summer resorts opened at that time. You should always market them before they are twelve months old because you can always make better prices on the young than on the older sheep and can make gain much cheaper on the light weight young lamb than on older sheep.

Question: I would like to ask you whether you recommend a cross with the Shropshire and the Southdown.

Mr. McKerrow: Well, if you have been grading up and are not satisfied with what you have, those meet the purposes fairly well. The Southdown gives extra mutton quality to the carcasses.

President Houskeeper: The next will be music by the quartette.

A song, "Don't You Cry, My Honey," by the Williamson Sisters' Quartette. (Applause.)

As an encore, a song, "Within a Wood," sung by the Williamson Sisters' Quartette. (Applause.)

President Houskeeper: The next will be an address, "Seven Years of Good Earth Roads," by D. W. King, Maitland, Missouri.

SEVEN YEARS OF GOOD EARTH ROADS.

Mr. Chairman, Ladies and Gentlemen: Before I shall say anything to you concerning "Seven Years of Good Earth Roads," I want to thank you for your kindness to me yesterday and today. More than eighty Ohio people have agreed to try our Missouri idea. I thank you for that more than for anything else, although I appreciate your cordiality.

In the beginning I desire to prevent any misconception of my position on the road question. It has become almost as important for me to state the fact that wherever macadam roads are a possibility they are a necessity, as it is for me to say anything at all concerning an earth road, because my hearers are not always willing to stop where I stop.

In a clipping sent me just a day or two ago from Indiana, a gentleman reported that this is not only a solution of the earth road problem, but that it does away with all necessity of surfacing the roads with stone. Please don't get that idea. When you put enough travel on the very best dragged road it will break down; when you put enough travel on the best macadamized road, the very best that it is possible to make, it will break down; you must have cobble stone; you must have granite block, or, as they are doing in New York City, you must lay wide steel tracks.

I may say to you who live in an earth road country, after seven years of road dragging, that during these seven years the mud has rolled but once. You earth road men appreciate that statement. No man who lives on a gravel road or a stone pike can understand what it means. I have seen the time when it was necessary to carry a spade in the wagon with which to dig out the mud from between the spokes of the wheels. Such conditions exist almost every spring in a mud road country where there is much travel, but that condition obtained only once during the last seven years on the half-mile of road that I have been dragging, and for only one short hour on one afternoon and the conditions were unusual. I will take the time to explain those conditions. If I recollect right it was in December. The ground was frozen hard. We had half to three-quarters of an inch of snow in the night. In the morning the sun shone brightly; the wind shifted to the south, and the road thawed about four inches deep; thawed before three o'clock; and between three and four o'clock the mixture of snow and thawed earth followed the wheel right over, clear down to the frost.

A member: That is the condition of the roads down in your locality?

Mr. King: Yes, sir; in our locality the mud rolls, and where the roads are not cared for by this method it rolls several times during the year under ordinary care and ordinary methods; that is the reason why I emphasize this point. The most important thing that I can say to you is to keep the road all the time in such a condition that all of the water that falls during the next rain will run off.

Mr. William Mills, a neighbor, met me in town about eighteen months ago, and said, "Well, Mr. King, I see you have not dragged your road." "No," I said, "it was a little too wet yesterday afternoon; I am going to drag it after noon today." "Well," he said, "I know it was a little wet, but I dragged mine yesterday because I was afraid it was going to rain." Now, wasn't that a peculiar statement? You or I, without previous experience, would look at the sky and say, "It is going to rain; my labor will be wasted if I drag this road. Therefore, because it is going to rain I won't drag." But my neighbor, after having had six or eight months' experience in dragging knew that if it rained and his road had been dragged it would dry off more quickly, so he dragged even if it was a little too wet.

Somebody asked me yesterday if there had been any public results that I could refer to. I don't think I answered the question fully. This Missouri method of taking care of the earth road is receiving wide publicity. I have received requests for information and for these photographs from the national department of agriculture; I have clippings from papers on the Pacific Coast, and on the coast of the Gulf of Mexico. I have received personal letters from a great number of states from people who want to get out of the mud, asking for information, asking for bulletins.

Mr. Ellis, our secretary of the state board of agriculture, printed a good roads bulletin—the one I want to send you. He printed that bulletin in February, 1903, and thought he had printed a good many, but in six weeks the edition was exhausted and he had to publish another and larger edition. I mention these facts to show the interest taken in order that you may see that the public does appreciate this plan.

Cash prizes are being offered in several towns in Missouri. The citizens of the towns are raising money and offering prizes for the best stretch of dragged road. One bank in Harrisonville, Cass County, Missouri, is offering a prize of fifty dollars for the best mile of dragged road within four miles of that town.

My friends, we do not appreciate the need of studying this earth road problem. A careful canvass of Missouri, county by county, discovered that ninety-nine and one-half per cent. of the roads in the state of Missouri are of the native soil.

When I went to see the county commissioners in Clark County, Ohio, the other day, their first statement was: "All of our roads are either gravel or stone," but I left them conceding that they had at least one mile of mud road to four miles of stone. Today I feel safe in asserting that fifty per cent. of the highways of the state of Ohio are of earth.

Doctor Chamberlain: More than that.
Another member: More than that.
Still another member: More than that.
Mr. King: Well, then, I have been conservative.

They have a kind of soil down in Mississippi and Louisiana that they call "Buckshot," and actually they have to roof it with board sheds in order to travel it in wet weather. What I am asking you to do is to put a shed or roof of puddled earth over the road.

Question: Is there much jack wax in that soil?
Mr. King: I don't know what that is.
A member: You mean gumbo?

Mr. King: The gentleman says you mean gumbo. Do you mean gumbo?

The member: No.

Mr. King: In what part?

The member: Southern part.

Another member: It is a gumbo.

Mr. King: The gentlemen says gumbo covers it.

The member: About the same.

Mr. King: When I set out to try to get the farmers interested, I went to our county court and said, "You have spent a great deal of money trying to fix the few miles of gumbo road between Bigelow and Mound City. Now will you make an experiment that calls for only fifteen to twenty-five dollars?" They began the latter part of August or the first of September,

Here are some of the statements made by people who live in that community. I will read you first a statement made by a judge of the county court; I believe you call them commissioners:

MOUND CITY, MO., Nov. 22, 1902.

Geo. B. Ellis, Columbia, Mo.:

Dear Sir—About two months ago the Holt County Court joined the citizens of Mound City in testing D. Ward King's scheme of road working. The notorious three-mile stretch of gumbo between Mound City and Bigelow was chosen for the test. A portion of it has been so wet all summer that we could not make, but the other part never was so good before in all the history of the road. The dragging is the making of it.

M. L. NAUMAN,
Judge of County Court.

The next letter is from an eminent lawyer.

MOUND CITY, MO., Nov. 22, 1902.

George B. Ellis, Sec'y B'd Agr., Columbia, Mo.:

Dear Sir—We have had a great deal of trouble with the road between this town and the town of Bigelow. Bigelow is a town 3½ miles distant, over Missouri bottom land. The road is a U. S. mail star route and is much traveled, when fit for travel. It is over gumbo soil and at certain times in the year is impassable. This fall the road has been worked by the King system of dragging and has been in better condition than it has ever been in the twenty years I have been traveling it.

Respectfully,

JOHN KENNISH.

The next statement is from a merchant in Mound City.

MOUND CITY, MO., Nov. 22, 1902.

Geo. B. Ellis, Esq., Columbia, Mo.:

Dear Sir—I have been a resident of this part of Holt County for 23 years, and in regard to the Bigelow road, the most of which is gumbo bottom, will say that as one of a committee of three appointed to oversee the work of improving the road, we find that the drag is the best implement we can use and we have kept that part of the road on which we can use the drag in better shape than it has ever been to my knowledge.

C. C. FULLER.

Here is Mr. Fuller who has known this road for twenty-three years and at this time, during the wettest season that we have had for eighteen years, he says it is better than he ever before knew it.

The next and last is from a veterinary surgeon who lives at Mound City.

MOUND CITY, MO., Nov. 22, 1902.

Geo. B. Ellis,Esq., Columbia, Mo.:

Dear Sir—In my practice as a V. S. I have had occasion to travel the gumbo road between here and Bigelow very often. I have been here five years and I never saw that road as good as it has been since they began to drag it. I go there to speed my horses. It is as smooth as a race track. I have many times driven over this two miles at a three-minute clip.

DR. C. U. SCOTT, V. S.

Those of you who are acquainted with gumbo roads know that it is never smooth; it always has hollows in it. If it is dry weather the hollows are empty; if it is wet weather, they are full of water; that is the only difference. I wonder how many of us have ever traveled over a road of that kind at a time when you could see the earth shake ten or fifteen feet at each side. Have you ever stopped to think what you were driving over? You were driving over a great long boat, a boat made out of puddled gumbo. There are many places where the bottom of a chuck-hole would be from twelve to eighteen inches below the surface of the water. It is a great deal harder to make a boat than it is a roof. I don't suppose there is a roof in this city that would hold water if you turned it upside down; it would leak. Nature has made a boat, nature and travel, and I am asking the people merely to take the stuff that may make tubs and that may make boats and use it to make roofs, hard smooth roofs over the road.

Are there any questions?

Question: How do you get the water off your road? Do you drain it off or let it run off to the side of the road?

Mr. King: Just let it run off.

Question: How about a road full of rocks and small stones?

Mr. King: Any stone too large to go through a three-quarter inch ring should not be in the road and I should throw it to the fence. If you drag you will get all those loose stones right in the center of the road where they are least in the way of travel. There isn't any other place you can put them unless you do put them at the fence. It won't do to put the stones to the ditch or they will fill it and bring the water to the center of the road.

Question: How about stones from an inch in diameter up to six inches or six and a half?

Mr. King: I was in New Albany, Indiana, last fall at one of their state institutes, and a gentleman was there who has written to Professor W. C. Latta of Purdue University, Indiana. His letter is dated November 19, 1903. I will read it:

PALMYRA, IND., Nov. 19, 1903.

Prof. W. C. Latta, Purdue University, Indiana:

Dear Sir—I heard Mr. D. Ward King at New Albany last September when he spoke on making good roads out of dirt, and I came home and tried it on a quarter of a mile of clay mixed with rocks. This road had been badly cut up by hauling heavy logs, but I put it into nice condition. I have only dragged it three times, but I find that I can go dry shod over this road when the others are still muddy and full of puddles. The drag slips over the stones; it does not move and fills in between them so as to make the road smooth; it fills the middle so the water all runs off. So far this has taken about two hours' work and I would not like to sell the improvement for $15.00 if I had to go back to the old rough road.

CHAS. WEBBER.

Question: Mr. King, I would like to ask you whether you have ever used the implement known as a road planer or leveler which we have in this country?

Mr. King: No, sir, we have used the large road machine.

The Questioner: Yes, sir. Well, isn't that preferable?

Mr. King: Gentlemen, after I have succeeded in persuading people that I am telling the truth the next thing I have to do is to persuade them they can't do this in one day. That is where this grader idea comes in. People want to get this done quickly, and it can't be. You can not put three coats of paint on a house in one day and do it right.

Question: What is the nature of the subsoil in your country? is it impervious or porous?

Mr. King: Well, sir, I don't think we have any hard pan.

Question. Where are you?

Mr. King: I am in the extreme northwestern part; I have lived there for twenty-five years and we have not anything there that we call hard pan.

Question: It sinks in the ground, or does it? Is it inclined to stand without any surface drainage; without any under drainage?

Mr. King: No, unless it is a very wet time.

Question: Water is not inclined to stand on top of the ground?

Mr. King: No, sir.

In answer to your question, I will say I have a postal card concerning a gentleman whom I mentioned to you yesterday—Mr. Hall. Mr. Hall made the statement to Mr. Ellis about which I talked yesterday—that he would not take fifty dollars for the comfort it had been to him and his friends. He did not say how much road he has been taking care of.

I will ask you to remember that this postal card was dated at a point less than eighty miles from Kansas City and at a time when that city and Topeka and Des Moines were under water and at the time when they were having those heavy rains. Mr. Hall writes:

R. F. D., MARSHALL, Mo., May 30, 1903.

Dear Sir—Replying to yours of 25th inst., length of road dragged ½ mile; two rolling prairie hills; soil, prairie loam—down to clay in two places from 50 to 75 yards each; at both these places there is a prairie "spout," caused by an under stratum of hard pan. The condition of the road for driving this morning is perfect. Nothing but asphalt will compare with it.

Yours truly,

MATT W. HALL.

A gentleman: I would like to call attention of the gentleman, and I will take but a moment, for I take it for granted that everything he says is true.

The point brought out is this. I am up in the Reserve. All the way up north and east the mud is the ideal road. Don't you forget it. I was at a state meeting of farmers less than a month ago when we endorsed heartily the effort for good roads by a bill introduced in congress.

From here down southwest in Ohio, since I have been paying taxes we have been spending hundreds of thousands of dollars without asking the state for one cent in making roads good.

This gentleman has brought to your notice this fact that with proper attention you can make your mud roads better than our gravel and stone roads. All our stone is to roof the road over to keep the water from running in; so that the water will run off. If you roof your road you will find it will be a wonderful improvement.

Doctor Chamberlain: It seems to me that we should not lose the benefit of these excellent talks and illustrations that we have had here. There has been shown a considerable tendency to laugh at it, and I acknowledge that at first I was greatly disappointed at the absolute simplicity and cheapness of the whole thing, and I was reminded of a little story in that good Old Book that we all used to read more than we do now, about Naaman, the Syrian, who came to get healed of the leprosy, and the Israelitish prophet told him to "go and wash in Jordan and be healed," and he said (in substance), "Not by a blanked sight." "Are not Abana and Pharpar, rivers of Damascus, better than all the rivers of Israel? I won't go and wash." But his servant said to him, "If the prophet had bidden you to do some great and expensive thing you would have done it quicker than anything." I am not getting the exact words. (Laughter.)

The main thing about the road matter is this. Draw a line from Sandusky, four miles west of Columbus, and straight on to the Ohio River, and to the west of that line lies nearly all your limestone. There you can and do make limestone pikes. I don't agree with anybody who says that the earth road is better than your limestone, solid foundation. It is not so good. You take the other half of the state of Ohio, where we have no limestone, and we have tried using shale gravel and it will go to pieces in three months of freezing and thawing and use.

The idea of Mr. King is to keep the water off by frequency of treatment—frequency of treatment with one man and two horses and a two dollar drag, whereas it is not possible with five men and eight horses, and a four hundred dollar machine. It is the cheapness and the simplicity and the frequency that commends it to us poor sinners in the eastern half of the state who have no good road material except the most expensive, hauled a hundred miles or more.

It seems to me that this idea of Mr. King's is an exceedingly valuable one and that we ought at least to do what we are asked to do and see whether we will get rid of the leprosy—for it is a leprosy.

It is like the old darky, when asked how he preached. He said: "In de first place I reads de text, and den 'splains de text and den I 'spounds de text, and den I puts in de rousements." I want to put in the "rousements" on this matter so that our brother, who came from Missouri, may know that we believe there is a good deal in it—enough in it so that at least we can afford to try it. (Great applause.)

President Houskeeper: I will appoint the Legislative Committee: Mr. C. W. Montgomery, Senator T. H. Ricketts, Senator Dunlap and Mr. E. A. Peters.

Is there any other business, or do you wish to further discuss any of the papers read this afternoon? If there is nothing further we will close with music by the quartette.

A song, "Sleep Little Babe," sung by the Williamson Sisters' Quartette.

And thereupon a sine die adjournment was taken.

Report of the Proceedings

OF THE

Ohio State Board of Agriculture

Held in the Auditorium, Board of Trade Building, Columbus.

THURSDAY MORNING SESSION,
January 14, 1904.

The Ohio State Board of Agriculture met in annual meeting in the auditorium of the Board of Trade Building and was called to order at 10:00 A. M. by Vice-President B. P. Baldwin, who said:

Owing to the illness of President Cromley, it becomes my duty to call this assemblage to order and to preside over your deliberations. I will not afflict you with a speech, but we will open our exercises by listening to an invocation by our brother, S. H. Ellis.

INVOCATION BY MR. S. H. ELLIS.

Let us pray. Oh God, our Father, we come together this morning under very favorable circumstances; Thy favor, Thy loving kindness has been extended to us more than our deserts. We are privileged to meet together in this, another annual meeting of the State Board of Agriculture. We are here, dear Father, as farmers and representing the interests of agriculture. Grant, we pray Thee, that this morning we may have a realizing sense of our dependence upon God, in His mercy, in His providence, for the fruitfulness of our fields, for the increase of our stores.

We come in close contact with them; we realize constantly, as we cultivate the fields and plant the seed and look for the harvest and gather in the ripened grain, we work together—not alone—with God as our partner.

And now, dear Father, as we meet in these anual meetings, and especially this one, may we not forget that in God's hands are the destinies of all, and that just in proportion as we work in harmony with Thy divine will and with the laws that Thou hast established in nature, just in that proportion will we receive blessings and abundance.

May Thy divine spirit direct us. Be with us in great mercy; overshadow us with Thy presence, even in this convocation, in this gathering. May we realize that God, our Father, is here, and may we feel that we are under his fatherly care; that Thy blessing rests upon this presiding officer, who has been unexpectedly called to preside over the deliberations of this body. Grant and direct him and may he so preside that great benefit shall come.

And I would not forget, dear Father, to pray for the president of the state board in his affliction. May the Lord of mercy be with him at his home this morning, as he realizes that the hour has come when he has looked forward to being seated in this chair and to preside over this body; and may he realize that God in his great mercy has directed that in other ways he should not be here.

Oh, Lord, bless him; keep him under the hollow of Thy hand; restore him to health; and may he yet do much good in the cause in which he is so deeply interested—that of agriculture.

And to Thy name we will give all praise in Christ. Amen.

President Baldwin: I will announce the appointment of the committee to wait upon the Governor and escort him to this meeting: Mr. William Miller, of Ottawa, Mr. Reuben Rankin, of Fayette, and Mr. D. L. Sampson, of Hamilton.

You will listen to music.

A song, "Lift Thine Eyes," sung by the Williamson Sisters' Quartette. (Applause.)

President Baldwin: The next will be the call of the counties by the secretary. The representatives will please respond by coming forward with their reports and have their names placed upon the roll.

LIST OF DELEGATES.

COUNTIES.	NAME.	POSTOFFICE.
Adams	W. S. Kincaid	West Union.
Ashland	Allen Richards	Nova.
Ashtabula	Chas. C. Babcock	Jefferson.
Athens	A. P. Linscott	Athens.
Auglaize	A. E. Schaffer	Wapakoneta.
Belmont	John Sidebottom	St. Clairsville.
Brown	J. S. Rainy	Georgetown.
Butler	J. A. Slade	Hamilton.
Carroll	David N. George	Scroggsfield.
Champaign	C. H. Ganson	Urbana.
Clark	C. W. Minnich	Mad River.
Clermont	Geo. Smysor	Belfast.
Clinton	A. Curles	Blanchester.
Columbiana	J. C. Billingsley	Negley.
Coshocton	Robert Boyd	Coshocton.
Crawford	J. W. Stuckman	Bucyrus.
East Cuyahoga	E. C. Foote	Warrensville.
West Cuyahoga	Wm. Biddulph	Dover.
Darke	J. M. Brown	Arcanum.
Defiance	Jacob Dickman	Defiance.
Erie	C. F. Steen	Sandusky.
Fairfield	Felix Swope	Amanda.
Fayette	Reuben Rankin	Parrott.
Franklin	R. J. Tussing	Canal Winchester.
Fulton	A. F. Shaffer	Wauseon.
Gallia	C. H. McCormick	McCormick.
Geauga	W S. Ford	Burton.
Greene	C. M. Austin	Bellebrook.
Guernsey	A. J. Clark	Cambridge.
Hamilton	D. L. Sampson	Silverton.
Hancock	E. L. Groves	McComb.
Hardin	Albert Rummell	Kenton.
Harrison	W. V. Scott	Hopedale.
Henry	Geo. L. Hyslop	Deshler.
Highland	I. F. Barger	Leesburg.
Hocking	Frank Adcock	Logan.
Holmes	Wm. Duncan	Killbuck.

COUNTIES.	NAME.	POSTOFFICE.
Huron	Fred W. Liles	Collins.
Jackson	J. K. Stewart	Jackson.
Jefferson	J. O. Hayne	Smithfield.
Knox	Geo. D. Neal	Mt. Vernon.
Lawrence	J. A. Bowen	Labelle.
Licking	J. Willis Fulton	Newark.
Logan	E. P. Chamberlain	Bellefontaine.
Lorain	A. Nieding	Elyria.
Lucas	W. H. Strong	Swanton.
Madison	L. W. Kilgore	London.
Mahoning	North Newton	Boardman.
Marion	G. W. Hinamon	Marion.
Medina	I. H. Kennedy	Medina.
Meigs	Frank Carpenter	Carpenter.
Mercer	C. F. Kruger	Celina.
Miami	W. F. Robbins	Piqua.
Montgomery	S. D. Bair	Dayton.
Morgan	Robert L. Evans	Meigs.
Morrow	J. M. Farley	Edison.
Muskingum	R. Y. White	Chandlersville.
Ottawa	G. H. Hyde	Port Clinton.
Perry	T. J. Tracy	New Lexington.
Pickaway	John W. Stewart	Williamsport.
Pike	W. A. Russell	Beaver.
Portage	C. R. Doolittle	Kent.
Preble	J. J. Kayler	Eaton.
Putnam	A. P. Sandles	Ottawa.
Richland	W. H. Shyrock	Mansfield.
Ross	C. S. Parrett	Lyndon.
Sandusky	Louis Nickel	Fremont.
Scioto	W. A. McGeorge	Mt. Joy.
Seneca	M. E. Inle	Republic.
Shelby	J. C. Royon	Houston.
Stark	J. J. Snyder	Paris.
Summit	D. J. Thomas	Cuyahoga Falls.
Trumbull	C. G. Williams	Warren.
Tuscarawas	J. S. Karns	Canal Dover.
Union	W. M. Titsworth	Marysville.
Van Wert	B. F. Leslie	Convoy
Vinton	J. Q. A. Vale	Vales Mills.
Warren	Geo. W. Carey	Lebanon.
Washington	J. S. Devol	Marietta.
Wayne	G. J. Ebright	Shreve.
Williams	Jacob Faber	Bryan.
Wood	W. H. Hannah	Tontogany.
Wyandot	Z. T. Smith	Upper Sandusky.

After the calling of the roll Governor Herrick arrived escorted by the committee and was greeted with applause, after which President Baldwin said:

Gentlemen, I now have the pleasure and the honor of introducing to you Hon. Myron T. Herrick, Governor of Ohio, who will address you. (Great applause.)

ADDRESS OF GOVERNOR MYRON T. HERRICK.

Mr. Chairman, Ladies and Gentlemen, and Members of the Ohio State Board Agriculture:

When asked to come here and make a few remarks I had the feeling that I would be at home with you. It seems like old times to be among those who are interested in agriculture.

As I came up Senator Carpenter asked me if I was a farmer or an agriculturist. I told him I was still a farmer, that I had never been able to accumulate enough money to become an agriculturist. (Laughter.) I understand that there is a wide difference between the farmer and the agriculturist, especially when net profits are considered.

I am greatly interested in your work. I have watched for many years the progress of the great agricultural interests of our country, and it has seemed to me as though the people who tilled the soil had not risen to an adequate appreciaton of their opportunities; that they had been standing still while other great interests were going forward. I believe that in a country like ours no industry can afford to long stand still. It must either go forward or it goes backward. Formerly the prevalent opinion was that a man could till the soil if he had not the qualifications for a lawyer, a doctor, a manufacturer, or follow some other avocation. That day has passed. The educated, scientific farmer is no longer a man to sneer at. He now is the man who is respected for his methods, which have demonstrated their winning qualities.

Distinct epochs have marked the advance and growth in manufacturing, and panics have been the milestones marking these periods. After the panic of 1873, when general financial disaster prevailed, and the storm had cleared away, manufacturers began cautiously and slowly to turn the wheels again, and on a new basis, which was by saving and utilizing the waste material, and conducting their business on new and more economical plans. Out of this came once more success to the manufacturing world, in sharp competition with the old world manufacturers. In 1893 we had another downfall, one more of those cyclical phenomenas never satisfactorily accounted for, after which, on the resumption of businesss, new and scientific methods, heretofore unknown, were introduced, and every possible economy was practiced. Then another period of success ensued, and manufacturing rose to a higher plane by the adoption of the best known world methods, and we equaled our chief competitor, Germany, for Germany has outstripped England in this commercial contest.

This also applies to their agricultural development, and from this we may learn a valuable lesson, for Germany's course has been in marked contrast with that of complacent, slow-going England.

At the conclusion of the French war, when the great award was given to Germany by France, the German government wisely invested that vast sum of money in schools of technology, educating her young men along scientific lines, enabling them to apply their knowledge directly to the highest development of their country, and the immediate result is today seen in many ways, especially in the manufacture of steel, the manufacture of analine dyes and many other products which come in competition with us. They have directed the thought of the young and vigorous into lines which are of immense benefit to that nation.

The development of agriculuture in the United States, in comparison with other great interests, has been slower, and when we consider its importance I am constrained to say that until recent years it has been very backward. The importance of agricultural colleges was not appreciated fully by our people, but the later developments and progress in this line indicate that a great awakening has taken place, the opportunity embraced, and that great latent power has now become a positive force. The opening of the great West, and the consequent cheap lands, railway discrimination, for a long time severely injured the agriculutral interests in the Middle West and East, but that is past and passing, and now the farmer is having his inning—that is, the up-to-date farmer. He had his day in England, for England controlled her home markets. We have captured our home markets, and because of our superior climate and soil we are feeding countless millions in the old world, where we are also finding a market for our surplus product of manufacture. Truly, the golden age is at hand for our people. Let us not longer be unmindful of our opportunities.

The other day in New York I saw a man from New Orleans, who had traveled over the South, and another from the far West. The man from the West said: "There is one class of people that a foreign war will benefit, for the granaries of the West are full to overflowing; the prairies are covered with cattle and hogs; and that's the farmer." The man from the South said: "Down South there is a splendid crop of rice, and if they fight abroad, we will give them rice, and plenty of it."

What you most need is the retention on the farm of your most valuable product—the boy. The problem has been how to keep him there, and this is solved when you can show him both profit and pleasure in the country. Both of these he has found in the cities. The cities have made large drafts upon the rural population. They have found the country boy desirable from every point of view. He has a strong, vigorous constitution, a healthy mind, the ability to stand the pressure of that vigorous, strenuous life that comes with the fierce competition in great cities. They absorb the young men from the country, and this is one other reason why farming interests in the East and Middle West have languished. In many of the old districts you find only the old people remaining; the boys have gone to the city. You were too slow for them. They have demonstrated by their successes in the city that they were the best products of the farm.

The time is coming when by technical education in agriculture, such as our splendid agricultural colleges and technical schools afford, the young man will find in the country all that his ambition craves. Give the farmer boy who has his own way to make a thorough education, not necessarily in Greek or Latin, but give him the technical knowledge that relates to that greatest of industries—that of farming. (Loud applause.) But if you keep him, you must also plan for his amusement and recreation. This is essential, for we are all social beings. I remember as a country boy there was mighty little recreation or amusement; it was a solemn grind for the young and old from daylight to dark. The amusements were not varied: some skating, some coon hunting, spelling schools, husking bees, etc. Up before daylight with a lantern to do the chores, late at night with a lantern to do the chores; occasionally, and only occasionally, a holiday. This was necessary, for we used tho old methods in farming, that meant toil early and late, or the mortgage on the farm would get us. Science has freed the mules from the street cars. Why not free the farmer boy from some of his toil and give him a better opportunity for the enjoyment of some of the pleasures which everybody should have an opportunity to participate in in this world. (Applause.) Encourage clubs and games and promote social life. (Applause.) If you do this, you can keep the boys on the farm. By the application of modern methods in agriculture, methods which are being applied never so rapidly as the last ten years—by handling your business as the banker or manufacturer must handle his if he will succeed, you can bring a good income out of the farm that will not otherwise pay. Make farming a live business, and it will attract the boys. It will keep them where you want them—where you need them, not only for the developement of the soil, but where your country needs them—as the backbone of the great conservative force of our republic.

The trolley line, the telephone, good roads, and other modern improvements are tending to decentralize population. They are sending the people "back to the land again." This is one of the latter day best signs.

The farmer need not worry about the trusts when he compares his industry with theirs. We are accustomed to thinking that the Standard Oil Company, the United States Steel Corporation, or the "Money Power," or some other interests are liable to swallow up the whole universe. Yet, what a bagatelle they are in comparison with even the value of the annual products of the soil—that is, compared with simply the income of the soil for one year, In the United States in 1900 the value of the products of the farm was $4,700,-000,000 With that sum of money you could buy the Standard Oil Company in the first two months of that year; the United States Steel Corporation, stocks, bonds and all, in the next two months; in the next two months all other trusts. In two months more you might buy all the national banks; in two months more pay the government debt; in the next month retire the greenbacks, and then have $500,000,000 left for pocket money. And that's your income for only one year.

It was the great, conservative, thinking agricultural people who saved the day for national honor in 1896, when party lines were obliterated and the patriotism of the people was appealed to.

It is on this broad, firm foundation that our institutions rest, and organizations of this character indicate that these foundations will not only remain firm, but will be strengthened and broadened, all for the welfare and happiness of a great free people. (Loud and continued applause.)

President Baldwin: We will now have a short recess that you may have an opportunity to grasp the Governor by the hand.

After a short recess, during which the members were afforded an opportunity of grasping the hand of the Governor, President Baldwin called the meeting to order and said:

We will listen to music by the quartette. (Applause.)

A song, "Grander than all the Banners," sung by the Williamson Sisters' Quartette. (Great applause.)

As an encore, a song, "Mighty Lak a Rose," sung by the Williamson Sisters' Quartette. (Applause.)

President Baldwin: At this juncture I will appoint a committee on credentials. That committee will consist of: A. J. Clarke, of Guernsey, C. F. Steen, of Erie, and G. H. Hyde, of Ottawa.

President Cromley had formulated his address before taking ill and it has been sent in and will be read by the Assistant Secretay, J. W. Fleming. You will now listen to the address.

Secretary Fleming: Gentlemen, we regret exceedingly the illness of our president, Mr. Cromley, and his inability to be present with us. We not only miss his wise counsel but his genial fellowship.

This address was prepared by the president some time ago and he sends it to me to be presented to you, and with your indulgence I will now read to you what he has written. (Applause.)

ANNUAL ADDRESS OF PRESIDENT T. E. CROMLEY.

Gentlemen—After another year's labor in the field of agriculture, we meet as an authorized body of the state to compare views, weigh results, and outline the work for another year, to the end that we keep pace with the times and build wisely for our posterity. The farmer is no longer a straggler in the rear ranks of the army of progress, but in many respects now leads the grand column, and much is expected of him in controlling the forces that rule the business world. His products, and his requirements in production contribute most largely to keeping the wheels of mechanical industry in motion, whereby profitable labor is furnished to millions of people, tonnage for the great vessels that ply the oceans and lakes, freight that makes profitable and necessary the building of railways wherever civilized man is found. The farmer is not a reserve force, but an active force and necessary element in every move of the world's progress. The thrift of the present times, in which agriculture is so pre-eminently the base, though not the commanding or controlling influence to the extent it should be, ought to move every intelligent farmer and every farmers' organization to labor for the securing of every right, every advantage and every convenience to which agriculture is entitled in the social, political and business world. as progression is made in all our affairs.

Through educational influences and surroundings, and through wise legislation by the state and national governments, we are now more closely than ever linked with the people of the cities and the important points of trade. A few years ago business of the farmer that required days of travel and periods of weeks in consummation, is now transacted from the farm home, with the same speed and degree of comfort as is enjoyed by the city business man. This is due to rapid transit through the agricultural districts, the service of the telephone and our free rural delivery.

The farmer is better organized than ever before and is giving more attention to legislation in the interests of agricultural education, agricultural investigation and experiment and the protection of his crops and live stock. He is studying more closely the nature and requirements of the soil, and the crops and varieties most likely to be grown with profit. He is solving more surely the breeding and feeding problems, and is coming to fixed types in supplying the highest priced markets. He is surrounding himself with utilities and conveniences for conducting the work of the farm that experience and experiment have proven the most protective and economical. The farmer is more than ever investigating and inventing with that degree of interest manifested in other industries and the good results are apparent in every farming community.

In the matter of legislation in the interests of agricultural promotion, I firmly believe and have reason to know, that when the lawmaking bodies are convinced that any proposed measures are calculated to broaden the scope of agriculture and better its condition, that it is realized all interests are concerned, and the measures are fairly and seriously considered and generally result favorably. If we do not always get what is needed it is sometimes from the fact that our needs are not thoroughly understood, from lack of proper presentation.

In this connection I am reminded of some of the important legislative enactments that have wielded powerful influence and given important aid;

that have pushed forward the farm interests and provided the ways and means of education that is elevating the farmer and benefiting every other industrial interest as well.

About the first important law that was a great aid to agriculture was that providing for the construction of the Ohio canals, becoming effective in 1825. The construction of the canals opened a means for transporting the farm products to the markets and were great factors until gradually superseded by the swifter means of steam railways.

Early in Ohio's history the value of agricultural societies and exhibitions of agricultural products seemed apparent. The first county agricultural society organized in Ohio was in Trumbull County.

It was established December 2, 1818, but the first agricultural fair was no doubt held in Cincinnati, September, 1820, under the auspices of the Cincinnati Society for the Promotion of Agriculture, Manufactures and Domestic Economy, with General Wm. Henry Harrison as president.

The first law enacted that could be definitely classed under agricultural legislation, was an act to authorize and encourage the establishment of agricultural societies in the several counties of the state, passed February 25, 1833.

February 27, 1846, an act for the encouragement of agriculture was passed. This law created the Ohio State Board of Agriculture, to consist of fifty-three members. The law was amended in 1847 and the number of members reduced to ten. The law was amended in 1898 as it now stands.

In 1880 the board inaugurated a system of making monthly crop reports. The work was a success, supplying valuable information to farmers that could not elsewhere be secured. The legislature afterwards made provision to sustain this work and also passed a bill that requires county auditors to return direct to the Secretary of Agriculture the agricultural statistics gathered each year by the township assessors.

In 1881 a law was passed making the Secretary of the State Board of Agriculture the inspector of commercial fertilizers, and under this law most valuable work has been done for the farmers of Ohio and thousands of dollars saved to him.

The State Board of Agriculture inaugurated farmers' institutes during the winter of 1880-81, appropriating $1,000 out of the earnings of the state fair to cover the expense. This was an idea in advanced agricultural work that was promptly taken to and grew in popular favor and value. On April 26, 1890, the general assembly passed an act providing for the organization and support of farmers' institutes, the expense of the work under the law as it still exists being covered by a per capita allowance from county funds. In 1880-81 twenty-seven institutes were held, with three speakers, President Edward Orton, Dr. N. S. Townsend and W. I. Chamberlain, the then secretary of the board. The growth of the farmers' institutes has been phenomenal. In the winter of 1902-03 240 institutes were held and twenty-seven speakers were employed by the board in the work. May 7, 1902, an act was passed by the legislature constituting the State Board of Agriculture the live stock commission for the prevention and eradication of disease among live stock.

In the same year a bill was also enacted into a law which places the inspection of nurseries and orchards under the control of the board.

These are some of the important measures provided by the general assembly of Ohio that have greatly promoted the agricultural interests of this state. There have been other important measures adopted, prominent among which are those relating to the agricultural college of the Ohio State University and the establishment of the agricultural experiment station, that is doing a grand work in its particular field.

I need not refer to the many important enactments by the national congress, in establishing the numerous important divisions of the Department of Agriculture, each of which is doing grand work and accomplishing great good in agricultural education and farm operation. The U. S. Department of Agriculture is entitled to generous support.

The establishment of the Ohio State Board of Agriculture was due to the efforts of some of the most prominent, intelligent, public-spirited men in the state, and they worked together harmoniously, irrespective of politics or profession. It would be impossible to estimate the good that has resulted from the work of the board, either directly as a department of agriculture, or indirectly through the county agricultural societies, farmers' institutes, crop reporting, etc., in improving live stock of all classes, farm products, fruits, etc., improving methods of cultivation and increasing production.

The year just closed marked the hundredth anniversary of the birth of the state. Contemplate its wonderful growth; its agricultural development. At the last census we had 19,244,472 acres of improved land, upon which was produced a diversity of crops not shown by any other state, and among the principal productions was 152,055,390 bushels of corn, valued at $48,037,895; 50,376,800 bushels of wheat, valued at $32,855,834; 42,050,910 bushels of oats, valued at $10,236,251; 1,053,240 bushels of barley, valued at $402,977; 257,120 bushels of rye, valued at $128,072; 164,305 bushels of buckwheat, valued at $87,242.

The hay and forage product amounted to 4,192,871 tons, valued at $29,047,919; clover and grass seeds 388.721 bushels, valued at $1,418,689. Of potatoes we produced 13,709,238 bushels, valued at $5,750,068. We produced of tobacco 65,957,100 pounds, with a value of $4,864,191; the weight of unwashed wool shorn was 20,350,721 pounds, with a value of $4,299,025, and I might go on enumerating the other farm products of Ohio, fruits, dairy products, maple, honey and garden production and then add the great live stock wealth, and still the importance of our agriculture would not be shown.

According to the last census, the total values were: Farm products, $257,065,826; live stock, $125,954,616. The valuation of the implements used on the farm was $36,354,150, and the total value of farm property $1,198,923,946. These figures represent briefly our great agricultural wealth and its corresponding contribution in taxes to the support of the state.

The agricultural progress of Ohio and its present status is so interesting that to elaborate would require far greater time than can be permitted in this address.

The different divisions of work in the Ohio Department of Agriculture are so familiar to all of you that I will not detain you with a lengthy account for the past year. The farmers' institutes are progressing with wonderful success, the only criticism is that the board is unable to grant all the requests for them that are made. The institutes are bringing the farmers closer together in the consideration of matters pertaining to their work and are developing ideas and practices that are telling in grand results each year.

The crop reporting work has gone forward as usual, the published reports being sent, each month, broadcast among Ohio farmers and summaries furnished to the agricultural press, so that the information secured through the voluntary corps of crop correspondents reaches about every farmer in the state.

The inspection of commercial fertilizers by the secretary of the board has required the most careful attention and a vast amount of labor, but it is labor well spent, in that farmers secure the best protection possible in the purchase of fertilizers to enrich their fields and increase crop production.

The establishment of the division of nursery and orchard inspection, as provided in the act of May 10, 1902, has entailed a vast amount of work that is bringing good results in protecting diseased or infected nursery stock and cleansing our growing and producing orchards from disease and insect pests that make short crops or crop failures that cost many thousands of dollars annually. The fruit crop of Ohio is of great value and the division of nursery and orchard inspection is a move in the right direction. For a detailed account of its work I would refer you to the report of the secretary and of the chief inspector.

The constituting of the State Board of Agriculture as the State Board of Live Stock Commissioners, under the act of May 7, 1902, was an important matter, which also secured the co-operation of the U. S. Bureau of Animal Industry in the inspection of diseased animals and the operations of quarantine to prevent the spread of disease. Since the passage of the act there have been several outbreaks of disease, but prompt measures were taken to eradicate the same, and in every instance with great success. The scope of the work might be profitably increased, as no loss is more rapid and more severe than outbreaks of disease among our live stock, and every safeguard should be provided and the commission and its state veterinarian equipped for quick action.

It gives me pleasure, indeed, to briefly review the Ohio state fair of 1903. After the successful exhibitions of the past few years we had come to believe that the goal of our ambition in this line had been reached. But now, after perusing the results of the exhibition of 1903, both from a financial and educational view, we are in doubt as to what height to set our standard.

As 1903 was the one hundredth birthday of Ohio's statehood, it was the idea of the managers of the fair to hold an exposition that would in every respect bring forth forcibly Ohio's greatness. How well they succeeded is best told by the results of the fair. Never before in the history of the state fair has there been an exhibition which was so uniformly complete. Not alone was every department filled with the best of their kind, but the same was true of every class. I will not attempt to enumerate all the various departments and exhibits, but I can hardly consider my address complete without referring to a few of the more important ones.

In the department of farm and dairy products and in that of horticultural products the exhibits required two of the large exposition buildings and the displays were in every way perfect and complete.

In our horse building, which a few years ago was considered by many to be entirely adequate for its purpose, there was not an empty stall, and among the 600 head of horses quartered there were to be found the best breeds and stables from all parts of the country. The same may be said of the cattle, sheep, swine and poultry departments. In the woman's department the display was far ahead of the average, proving that woman is keeping pace with man in this age of advancement.

But it is in the machinery department where the farmer and the mechanic walk arm in arm, and from the extensive and varied exhibit many ideas were gleaned which will work to their mutual advancement.

The merchants' display was all that could be asked for, and clearly showed that the wise merchant is not slow to grasp this opportunity of displaying his wares to the thousands of visitors.

There are many people who labor under the delusion that the fair is simply an event of monetary concern, and who never look deeper and see that the fair is a mirror in which is reflected the educational advancement of the farmer and the mechanic.

Our annual exhibitions serve as a channel from which is obtained food for thought by thousands of progressive farmers, and it is the aim of this board to so broaden that channel that the most pessimistic may see the good and partake thereof.

Credit for the success of the exposition is due to each member and the officers of our board, as it was through their untiring efforts and energy that the result was brought about. In the state fair bulletin for 1903 will be found a complete report of the fair, and, no doubt, you will find it to contain many interesting items.

Gentlemen, I hope the deliberations of this day will result in much good, so thanking you for your attention, we will proceed with the regular order on the program.

President Baldwin: We will now have the annual report of the treasurer, Mr. T. L. Calvert.

ANNUAL FINANCIAL STATEMENT OF THE OHIO STATE BOARD OF AGRICULTURE FOR THE YEAR ENDING DECEMBER 31, 1903.

The following statement presents, in a summarized form, the financial transactions of the Ohio State Board of Agriculture for the year 1903, as shown from the several books and accounts, and indicates correctly the general financial condition.

Receipts are shown from all sources, including balances at beginning of year, and the balances remaining at the close of the year's transactions.

Disbursements are indicated on the several accounts, all of which have been by checks and orders, properly signed by the president and secretary, as required by the rules.

The statement also sets forth the total cost of state fair grounds, buildings and improvements up to date, and their present estimated total value, all of which is

Respectfully submitted,

T. L. Calvert, Treasurer.

RECEIPTS.

FROM MISCELLANEOUS SOURCES.

Charged to the Treasurer.

Balance on hand at beginning of year		$6,959 82
From County Farmers' Institutes	$ 8,373 81	
From fertilizer licenses	13,000 00	
From sale of old barometers	10 00	
From nursery and orchard inspection	338 51	
		$21,722 32

STATE FAIR AND GROUNDS.

On General Account.

From American Trotting Association	$ 43 50	
From sale of hay	152 56	

From rent of house on grounds	$ 47 00	
From sale of old fence posts	4 80	
From Natural Gas Company for privilege of piping through grounds	260 00	
From sale of material, coal, old iron feed boxes and brick	46 95	
From payment of outstanding notes of 1901, under the contract with Columbus Board of Trade for State Fair of that year	2,070 00	
		$2,624 81

PROCEEDS OF STATE FAIR, 1903.

From sale of full admission tickets	$35,072 00	
From sale of children's tickets	827 75	
From sale of grandstand tickets	3,293 25	
From sale of special tickets	36 25	
From sale of wagon tickets	18 00	
From night admissions—cash	92 50	
From sale of privileges	4,424 25	
From class entrance fees	1,533 75	
From speed entrance fees	3,010 00	
From fees, Woman's Building	10 00	
From rent of private machine buildings	300 00	
From American Polled Durham Association — special premiums	200 00	
From the Armour Fertilizer Works—special premiums	100 00	
From American Shorthorn Breeders' Association—special premiums	375 00	
		$49,292 75
Total receipts from all sources		$80,599 70

DISBURSEMENTS.

For old outstanding checks redeemed	$ 49 00	
For Farmers' Institute expense	7,923 42	
For feritlizer inspection and analyses	6,906 65	
For general department expense	668 40	
		$15,498 47
For improvements, repairs and expense of fair grounds	$12,401 06	
For material and supplies for the fair	1,180 04	
For printing and advertising	4,308 61	
For expense of fair departments	3,055 53	
For general fair expense	2,946 30	
For premiums	20,446 45	
For expense of members	888 93	
For payment of notes and interest	3,859 42	
		$49,086 34
Total disbursements as per orders issued		$64,633 81
From which deduct the outstanding unpaid check of 1903		15 90
And there is shown actual disbursements		$64,617 91
Which, deducted from the receipts from all sources, shows cash balance on hand		$15,981 79

PROPERTY VALUE.

The cost of state fair grounds and improvements to date has been	$557,663 78
Estimated increase in value of ground since the original purchase	$399,970 00
Total estimated value of state fair grounds and improvements	$957,633 78

President Baldwin: The next will be the report of the Auditing Committee, which will be presented by Mr. C. H. Ganson.

REPORT OF AUDITING COMMITTEE.

The Ohio State Board of Agriculture.

Gentlemen:—The undersigned Auditing Committee, having made a complete examination of the books, vouchers, checks and orders pertaining to the financial transactions of the board for the year 1903, beg leave to report that we find the transactions to be properly recorded in the records. Receipts from the several sources are correctly set forth and all disbursements are properly shown. Checks and orders issued in disbursements were carefully compared with the vouchers and book entries and all found to agree. Balances are properly set forth, and all accounts are complete, correct and fully comprehensive.

The examination of books, accounts and papers, also included those pertaining to state appropriations made for specific purposes of the department.

The annual financial statement recorded on pages 390-393 of the financial record is a very clear and concise summary of all the financial transactions and the detailed accounts.

Respectfully submitted,

R. P. Baldwin,
J. L. Carpenter,
C. H. Ganson,
Auditing Committee.

President Baldwin: What will be done with the report of the Auditing Committee and the Treasurer's report?

Thereupon it was moved that the reports be adopted.

Motion seconded and unanimously carried.

President Baldwin: I will next appoint the committee on Resolutions. Committee on Resolutions: Mr. R. O. Hinsdale, of Medina, Mr. J. J. Snider, of Stark, and Mr. W. M. Titsworth, of Union.

Mr. G. H. Hyde, of Ottawa County: It would seem to me it would come a little closer to Mr. Cromley if we took action just now, expressing our sympathy and condolence in a special message from this association. I move you that we send Mr. Cromley a message of sympathy and condolence, and would ask that this resolution be read.

Whereas, We learn with deep regret, of the illness of President T. E. Cromley, which illness deprives this meeting of the pleasure of his presence, and the aid of his wise counsel, recognized always as valuable, conservative and to the decided advantage of the important interests represented by this body, therefore,

Resolved, That we express to Mr. Cromley our deepest sympathy in his affliction, and our sincere hope for his speedy recovery and continued activity in the affairs that so greatly concern the agriculturists of the state.

Resolved, That the thanks of this body are hereby tendered to President Cromley for his annual address read before this body, which address reminds us of the importance and growth of agriculture in Ohio, and the necessity for exercising our best energies in maintaining our various interests, which are to the best interests of the state.

Resolved, That the secretary transmit to Mr. Cromley, with the best wishes of all, a copy of these resolutions.

Mr. Hyde: I move the adoption of the resolution.

Motion seconded and unanimously carried.

President Baldwin: We will now have music by the quartette.

A song, "Old Kentucky Home," sung by the Williamson Sisters' Quartette. (Great applause.)

As an encore, a song, "I Saw Them Do It," sung by the Williamson Sisters' Quart tte. (Applause.)

President Baldwin: We are now ready for the nomination of candidates for members of the State Board of Agriculture.

Mr. W. S. Kincaid, of Adams County: In nominating candidates for the office of member of the State Board of Agriculture, there are two things which we should consider, first, ability, and second, location.

The gentleman whose name I want to present, has the ability, I believe, to fill this position satisfactorily to the agricultural interests of this state; and when we, the agricultural people of Ohio, are satisfied, other people should be satisfied. The gentleman whose name I wish to present was a successful farmer and school teacher for seventeen years. He was so successful at that that he was able to enter the mercantile business, and all of us farmers you know do not do that well by a whole lot.

He did something else, something that but few men ever attempted to do. When this country's life was at stake he offered his services to the country at the age of ten years, and there are but few men who have done that. Of course he was rejected, but it shows this; it shows the snap and vim that is in the man.

He is a successful business man; he is a man who has the agricultural interests of this state at heart. I know whereof I speak.

because we are associated closely in the fair business. He took a fair up and made it a success, after the fair had gone down in his county. He assumed the responsibility for an agricultural fair in Scioto County; he made that fair a success by his ability.

My candidate is not big in stature, but he is big in ability.

The next is location. From Meigs County, where my friend Carpenter is now a member, to the Indiana line, and from the Ohio River to Clark County, we have no representative, and surely the great southern part of this state has a right to a representative on this board and should be recognized. We are not demanding this; we are asking for it. There is a large scope of territory from Meigs County along the southern part of the state, and at the present time we have no representative. We are purely an agricultural district.

I do not believe in making long speeches in nominating a candidate. Gentlemen, the man I want to present is the man who has been championed heretofore by the Hon. H. S. Grimes, of Portsmouth; I nominate Daniel T. Blackburn, of Scioto County.

Mr. Robert Boyd, of Coshocton: Mr. Chairman, and members of the State Board of Agriculture: Coshocton County comes to you with a candidate. The party that we present to you is Honorable E. L. Lybarger. Mr. Lybarger is a farmer, a successful stock raiser, he is an old soldier and has been honored by the soldiers of this state as their Chief Commander of the Grand Army of the Republic of Ohio; he has held other positions of responsibility and trust in this state, such as a member of the state board of public works.

He is a man for whom we feel proud to come before this body and ask support.

Speaking from a geographical standpoint we feel that we are entitled to recognition. You take a map of the state of Ohio and examine it and you will find that there are but three members east of the center line in this state at the present time. Today the time of one of those members expires, leaving but two of the old members in the eastern half of the state of Ohio.

We ask this for our candidate, but, as my brother says, we do not demand it, but from that standpoint we ask for it.

The party whom I nominate is Honorable E. L. Lybarger, of Spring Mountain, Coshocton County.

Hon. Orla E. Harrison, of Greenville, Darke County: I want to congratulate the members here upon the splendid enthusiasm manifested in behalf of the agricultural interests, and I concede the right of every part of the state to ask for representation upon the State Board of Agriculture.

One year ago western Ohio came to this convention and presented its claims for a member of the State Board of Agriculture. We are here today with the same man, with more enthusiasm, with more votes and with more boosters than ever before. Gentlemen, we do not ask that he be named simply because of our geographical position, but that is an important factor.

For a half century in our county we have had a fair, and it is one of the best fairs I believe in the state of Ohio. For a half century we have been attending these conventions—not myself of course, but for a half century we have been coming here, and Darke County has been identified with the agricultural interests of the state and never until last year did we ask the recognition of a place on the state board. We felt then that we were entitled to it; we feel now that we are surely entitled to it. We come here, with all the balance of western Ohio, asking you to give us this man, the man of our choice.

My friend is a good deal like the man who saw the first railroad train, and as he saw the great engine steaming and puffing, he says, "Malinda, they will never start her." But pretty soon the engine did start and it went away upon the tracks and he started to follow it and could not keep up, and finally he says, "Malinda, they will never stop her." And so it is with us, gentlemen. For a half a century we have been preparing to ask for this place; a year ago we started and now we do not propose to be stopped. We propose to have a member some time. We propose to come here and identify ourselves—we are not going to be mean and nasty about it; if we are defeated we will go home and work again for the interests of the State Board of Agriculture, and we will come back again next year with the same man, asking for the same place.

I wish, my friends, that you could know Mr. Ammon as I know him. If we could have the time to talk with you as to his ability, as to his qualifications, and as to his claims, I am sure some one would make a motion to make it unanimous.

As a boy he lived on the farm. He left his books and went forth to fight for his country. When he came home he identified himself with the agricultural interests of the state, and he has "stood pat" on all those propositions. He has been a member of our county board for sixteen years and has been our treasurer for some years—and he has never stolen a dollar of which we know. (Laughter.)

My friends, I do not want to take any further time, but I wish that I could impress you with this one thing: That we want to go home to Darke County and to western Ohio and take back the message that the state of Ohio has recognized our claims and has recognized the ability of this man.

We know him; we honor him; we trust him; we believe in him; and we want to see him made a member of this state board.

I present the name of Ed. Ammon, of Gordon, Ohio. (Great applause.)

Mr. D. E. Daniels, of Franklin County: The candidate I wish to present to you for nomination I believe has never been a soldier; he never left his books to go to war, but it is currently reported over in Licking County that he ran away from the adjoining school to attend the Licking County fair many and many a day. (Laughter.)

Gentlemen, we are here today to fill two vacancies upon this board. It is not a question of local pride; it is not a question of gratifying one territory more than another, but the interests of the great state of Ohio are at stake here today, and in your judgment today you must consider the state of Ohio and not any particular locality. You could select twelve men from any county in this state that might give you a better administration than twelve scattered over the state. It is the question of the men and not of where they live, although my candidate also has geographical reasons for his nomination.

I never attend a meeting of the state fair that I am not impressed with the question: "How can the men, busy with their own private affairs, find time and energy to inaugurate and conduct an exhibition so complete in every department and so well managed in every detail?" The answer to that question is not far to seek. The men who do this work are skilled in their particular lines; they are men who bring to that work long experience and the effectiveness that is inseparable from it.

J. Willis Fulton, of Licking County, is the kind of man who will bring to your board that experience which is necessary to make his work successful.

We are sorry to lose from that board the men who are going out at this time, but let us supply their places with material which has already had experience in the same line. With due regard to my friend from Darke, in Licking County, where I believe they have the best county agricultural society in the world, for twenty-five years the mainstay of that association has been J. Willis Fulton. There is not a boy grown to manhood today, who was once a boy in Licking County, who could not recall year after year, a fellow riding through the grounds calling "J. Willis Fulton," as if the whole society depended upon him.

For more than fifteen years he has been a member of that board; he has held every office in it. Elect J. Willis Fulton to this board and you will put into it an energy and enthusiasm that is not surpassed by any member of the board. You will also please every one of the great fair-going population of Licking County, because Willis Fulton is the idol of all those people. Elect him and he will do more than any man you can name today to continue the great success that attends your public exhibitions in this state.

J. C. Royon, President of the Shelby County Agricultural Society: I do not want for a moment to say a word in disparagement of the gentlemen whose names have been presented. I think the geographical situation should have some bearing and ought to be considered, but whether or not it is to be considered I have a name to present, whose selection I am sure would reflect great credit.

Mr. J. E. Russell, of Shelby County, has been identified with agriculture, and nothing else, from his boyhood and is now in active charge and has full supervision of a farm. He was selected by the board of our county to take charge of and have entire management of the fair. And I am proud to say to you that through the ability and the care and the prudence and the work of Mr. Russell that fair and the agricultural interests represented there, are entire successes. Every one will concede that it is to his wisdom and to his pains that this result has been brought about. In addition to that, he has every qualification to serve in an administrative way, and in the wide field that is presented, as I apprehend to a state board of agriculture; and as it is expanding and getting larger and more important, it would be a valuable acquisition to have such a gentleman represented upon that board.

In reference to location: He is from western central Ohio. The outgoing member is from farther up the state. His selection I think would preserve admirably the conditions of representation upon that board, he being midway between Cincinnati and Toledo, at the head of the great Miami valley, and as the gentlemen must concede, an agricultural part of the state that is certainly very important. If I might use a word, a higher expression of the term as to its importance, it is the part of the state in which we hold the great big fairs. It is very close to my neighboring friend, Harrison's county, which we call "The State of Darke County."

I desire to take no further time, leaving the matter to the candid judgment of the members as to who should serve on this important board, with the assurance that you will make no mistake in selecting Mr. Russell.

Mr. W. H. Hannah: I do not wish to occupy much of your time. I am thoroughly interested in this work and thoroughly interested in the educational part, and I do not want to take up your time in telling what my candidate has done and what he is going to do.

I wish to place in nomination for elevation to this board, a man of whom I think the State of Ohio would be proud. I nominate L. P. Bailey, of Belmont County. (Applause.)

Mr. C. G. Williams: Mr. Chairman and gentlemen of the convention: I desire to second the nomination of Mr. L. P. Bailey, of Belmont County.

In choosing a member of the State Board of Agriculture it certainly is desirable that we select a representative farmer; and now that the agricultural interests of our state and the work of our State Board of

Agriculture are so varied it is very important that we select a man who is prominent along special lines, for the simple reason that no one man can be thoroughly at home along all lines of agricultural administration.

It has seemed to some of us that the dairy industry of this state was entitled to further representation. If this be true the question arises: "Who is the man to represent this industry upon the State Board?" Go back if you will twenty-five years to a little hill farm in Eastern Ohio, where we find a renter struggling along, trying to wrest a living from those hills. Struggling, I say. Well, if we follow him a few years we see that he is succeeding; with scanty equipment, with limited resources, that man is rapidly forging to the front in this state. With a few cows and with a hollow dug in the hillsides, which he fitted out into a little home, he has made a name in the dairy business that is known all over the United States.

I mean what I say. Seventeen years ago, Mr. Bailey sent his little package of butter to the great dairy exhibition at Madison Square Garden, New York City, and there in competition with the dairy products of the whole country made by experts in dairy plants costing thousands of dollars this product from the dugout in the little Ohio hillside drew second. That was seventeen years ago, and from that day to this Mr. Bailey has been going onward and upward. He is the leading man in the dairy industry today in Ohio. He was organizer, and for years secretary, and today is President of the Ohio Dairymen's Association.

But Mr. Bailey is something besides a dairyman. To the most of the members of this convention his character and standing are very well known indeed. You recognize him not only as a dairyman, but as a man in the fullest sense of the word.

Some of us have thought that he would make a good member of the State Board of Agriculture. I want to tell you his neighbors think so, too, and they are here today heartily supporting him. I don't believe there is a county in the state but where you will find members that will be pleased to hear of his election.

Gentlemen, I am very glad indeed to second the nomination of Mr. Bailey. (Applause.)

Mr. G. J. Ebright, of Wayne County: I do not wish to consume your time, or make any lengthy speech, but this organization is an institution established for the betterment of agriculture throughout the State of Ohio. Therefore, for the best results all sections should have as nearly equal representation as possible.

As Shakespeare says in describing all persons—"This is a man;" in seconding the nomination of E. L. Lybarger, of Coschocton County, I can say, "He is a man." (Applause.)

Mr. E. P. Chamberlain, of Logan County: As one of the representatives of the west central part of Ohio I desire to second the nomination of the gentleman who has been named from Darke County, Mr. Ed. Ammon

I know I can not fluently quote Shakespeare, but I say from my own personal knowledge for the last seven or eight years in the fair business I have learned to know Mr. Ed. Ammon, and I have learned to know that he is a gentleman.

Whether Shakespeare says he is a man in the full sense of the word; whether you quote Henry George and say, "I am for men;" or whether you give some other expression, I can say wholly and without reservation that Ed. Ammon is a man of merit.

A little story comes to me just at this moment, and as it is short I will tell it. I remember of reading in Bullwer Lytton the beautiful story, it seems to me, where he represented two of the characters, one being an old man and the other his son, and the old man having taken his son down to the bridge one night, in looking down the stream towards Westminster Abbey, he said to the boy, "Over yonder many are buried beneath those slabs; they are there because of being born great;" and pulling his son closer to him he said, "Yes, indeed, there are others there who are there because of their wealth;" and he pulled his son a little closer to him and said, "My son, that is not all; there are some others over yonder because of their merit."

I believe that I am expressing the sentiment and the good feeling of a large portion of the agriculturists of Ohio, and especially those whose interests have been especially identified with the fairs of Ohio, when I say when you elect a man to represent the agricultural interests, you are not making a mistake if you select Ed. Ammon.

Mr. H. H. Farr, of Preble County: I am from an adjoining county to our friend Ammon, and I hope and trust you will support him, because we people in the western part of Ohio want a member on the State Board of Agriculture.

Another member: I rise to second the nomination of Daniel T. Blackburn, of Scioto County.

Mr. C. H. McCormick, of Gallia County: There have been some very eloquent addresses made here in presenting the names of numerous candidates, but I am not going to make an address. The man whom I am going to present is well known. I present the name of S. H. Ellis, of Warren County, Ohio.

President Baldwin: We will now have some music by the quartette, after which we will stand at recess until two o'clock.

A song, "The Night has a Thousand Eyes," sung by The Williamson Sisters' Quartette.

And thereupon a recess was taken until 2:00 P. M. of same day.

THURSDAY AFTERNOON SESSION,
January 14, 1904.

The State Board of Agriculture met and was called to order at 2:15 P. M. by President Baldwin, who announced that the first on the program would be music by the quartette.

A song, "Bed Time Song," sung by the Williamson Sisters' Quartette. (Applause.)

President Baldwin: The first address on the program this afternoon will be by a gentleman from Pennsylvania and his subject will be "Poultry in Ohio." I am pleased to introduce to you Mr. T. E. Orr, of Pennsylvania, who will address you.

POULTRY IN OHIO.

Mr. Chairman, Ladies and Gentlemen: I appreciate very highly, indeed, the privilege of a place on this program before such an audience as this.

I am not unused to thinking and talking about the old hen, but not before such audiences as I have here at this state meeting in Ohio.

I hope there are some clergymen present in the audience this afternoon, for if there are some of that persuasion I always feel safer. I know that when there are both clergymen and ladies present it is fairly safe to proceed, but in the absence of both I always feel myself in danger, especially before an audience made up largely of the average farmer.

I am not surprised when I begin to say some things about the abuse of the hen, if stovewood or other missiles of that kind come flying my way. I think I am pretty safe in saying that at this time of the year there will be no fresh eggs thrown at me—they are too scarce and the price is too high.

The average farmer will often designate the subject of poultry as small potatoes—too few in a hill for him. He will want to talk about horses, and cattle, and sheep, but when it comes to the hen, the litite despised hen, he will say, "Excuse me, if you please; I don't want anything to do with it." He wants to get out of the way; he will have no part or lot in that matter. The only time he takes any interest at all in raising poultry is in raising it with his knife and fork, and that is about the only time he has anything good to say of the poultry.

Why this should be so I cannot understand, for of all these little animals that help to make our farming operations successful, I know of none that could be made more profitable; I know none that, having received the proper attention, have proved more profitable than this subject of poultry raising. I know, indeed, some men who have started in in the live stock business, to breed horses or cattle, or perhaps work up in the dairy business, that had to depend very largely for the groceries upon what their wife did with the hen. But still they failed to give the hen, or the wife, either, the credit that belonged to the one or the other.

And yet when we come to consider it from a statistical standpoint this poultry business is not so despisedly small as many people think. I spent a little time this morning over in the state house going over Ohio statistics, and the poultry product for a single year in the state of Ohio amounts to twenty million dollars. It is greater than a good many of our other crops. I shall make no invidious comparisons, at any rate, concerning other crops. You will not find me saying anything against the horse, cattle, sheep or dairy business, but I do say that this poultry business is not so small in its size that it should be despised. It is a business in which we can interest our boys and girls; it is a business that will help us all to keep the boys and girls on the farm if it is considered as a business; if it is not indeed considered as a desirable side line for our farming operations.

But you will say that if everybody goes into the business of poultry prices will go down; the high prices which prevail every winter—eggs thirty and forty cents a dozen—will not obtain then, and the high prices of poultry will not then exist, and you will find poultry a drug in the market.

My friends, that is not a good argument. You need not be afraid of its going down. I live in the state of Pennsylvania, adjoining the great state of New York, and those states pride themselves on their wonderful resources, their vast agricultural products, but the states of Pennsylvania and Ohio, together, do not produce one-fifth of the eggs that they consume. The one city of New York consumes annually more eggs than the entire Empire state produces. Is there any danger then that you are likely to overdo this; that you are likely to bring down the price of eggs? Not in winter time at any rate.

There is in Pittsburg one firm which makes a specialty of poultry and eggs, and that one firm receives daily an average of between three and four hundred crates of eggs, each crate or case holding thirty dozen. It pays out each year for eggs one-half million dollars.

Where do those eggs come from? Pennsylvania? Not one of them. From Ohio? Not one of them. And yet half a million dollars' worth of eggs pass to that one firm in your neighboring state, right through the state of Ohio, and not an egg comes from Ohio. The question then is do we produce enough eggs since there is a market for our eggs if we should produce them; a market for our poultry if we should grow it?

Ohio stands well in poultry culture—it stands third in the list of states, but I wish to say that our statistics are very meagre—far from complete.

I have asked this question in not less than one hundred institutes in the past two years: "When the assessor or the census taker comes around how many of you know that you gave in as a part of your assets or a part of the farm product your poultry and your eggs?" Ask that question, and I say not one in five will know that they gave them in, and yet the poultry statistics of this country show that the product of a single year amounts to three hundred million dollars.

Six states produce nearly one-half of that, and Ohio is one of the big six. Ohio, Iowa, Illinois, Missouri, Indiana, Pennsylvania are the six principal poultry-producing states. In each of these states over fifteen million dollars of poultry is produced each year, including the eggs and young stock sold off the farm, so that Ohio has an honorable rank.

But do you know that Ohio is not producing one-half as much poultry as it might—no, not one-fourth—and it has a ready market. I know that Ohio stands high in the production of grain. Your annual corn crop is worth fifty million dollars; your annual oats crop is worth twenty million dollars; your wheat crop is worth thirty million dollars. By marketing more of these products at home, especially your oats and your wheat, your poultry crop ought to be increased from twenty millions—and I believe it is at least thirty millions on account of the fact that the statistics are not complete—to at least forty millions; and with profit to the men and women who will make it.

I am not advising farmers to go into the poultry business. It would be folly for the man who is past forty years of age to attempt to take up that line of business as a business and to neglect or desert any of the lines in which he has proved successful. The man or woman who succeeds as a poultryman or woman must begin early in life and must learn something from his favorites. He must learn something by familiarity with them, their habits, or he will not be successful. But I do say that there are thousands upon thousands of farmers in Ohio and in every other of our central states who might produce more poultry. The average poultry crop on the farm is only about sixty-four dollars. And by the way, our statistics deal with only the poultry raised on farms and ranches, and do not take into consideration the poultry in the suburbs and in the villages and in the towns. It has no place in our statistics, and even our national statistics today only deal with poultry on farms and ranches.

Is your farm product of poultry, is your neighbor's product of poultry more than sixty-four dollars? If it is you are above the average. If it is less than sixty-four dollars, then you are below the average.

But if it were only sixty-four dollars it would be something; still how easily it might be developed. I know there are before me those who have neighbors whose product year by year, from poultry, on their own farms, is two or three times that.

But I am here to speak for increasing your poultry product; for growing more poultry and better; producing more eggs and better eggs. You will not hear me say a word—indeed, you can hardly get me to say a word of cold storage or preserved eggs, or anything of that kind. What we want is fresh eggs. Market them at once, so that they go to the consumer right from the producer in a straight line, and they go within such a close limit of date that they are fresh.

A friend of mine who has made quite a success of the egg business, he being on the Hudson River and marketing in New York, has found that by marketing his eggs absolutely fresh—they go to the consumer within three to five days of the time that they were laid—in the nicest possible condition, he can get all the time five cents a dozen or more above the highest retail price. He is getting sixty cents a dozen now for his eggs in New York. Those are not cold storage eggs that have been preserved in these various preservatives that have been recommended. They are fresh they are clean and nice. There are no tracks of the old hen's feet. His hens do not have to wade in a muddy or dirty cow yard and leave their tracks on the eggs, so that the eggs can never be first-class, no matter how much we might wish. His eggs are laid by hens that look as much alike as possible, all white, and the eggs are the same color. He has found that it pays to produce a fine article. He keeps close to three thousand hens all the time. He makes a contract with those hens that they are to lay eggs when the eggs are at the highest price, and he puts the eggs on the market in the finest condition.

We are doing the same thing. We find that the people even in a county seat town are ready to pay from five to ten cents a dozen more when they know they are getting eggs which are all right, and we had no trouble in selling ours at forty cents per dozen wholesale. The first of January shipments were forty-five cents a dozen wholesale; during the month of November thirty-five cents wholesale. All the grocers in the town that get our eggs kept the telephone wires hot out to the farm, as to which one of them should have the next lot of eggs. We virtually guarantee those eggs; we put the stamp of our farm on them, and it is a guarantee that those eggs are all right.

My friend up the Hudson goes further. He puts the name of his farm and the date the egg is laid on and he puts those eggs in cases and ships them by express to the consumers. He has for his customers some of the leading hotels and club houses in New York City, and he gets those eggs to the consumers within four days of the time they are laid. He puts a guarantee upon them that if any man finds any egg in any shipment that is not right—first-class in every particular—his eggs for that month cost him nothing. A friend of his tells the story on him that he not only puts the label of the farm and the date the hen laid the egg, but he attaches the affidavit of the hen that laid the egg, saying that it is all right. (Laughter.)

He says that it pays him. I believe it does. At least we find it so in our own case, and I know there are others who are making a success of it. I know there are men who have quit other branches of farming and gone into the business and are making good money at it. They have found the little despised hen to give a profitable return.

I shall not attempt to go into these details. I have talked to farmers' institutes on this subject, and at some of these state institutes which I have attended a great deal of time has been spent in discussion along that line. I have not the time to go into details this afternoon, and I can only as far as possible bring out the points which I wish you to consider, with an eye to the profit for yourselves, for your neighbor, or more particularly for your son whom you wish to keep on the farm.

I am not afraid of the comparison of the hen with the dairy cow, but I am not running down the dairy cow. I have one farm in Beaver county, Pennsylvania, and another across the line in Ohio, and I know that dairying helps to make my living. I have nothing to say against the cow, but I do want to say that the hen practically cared for will give returns which the cow can not begin to make. The hen has some possibilities in her makeup, in her character, in her disposition which the cow can not approach. So I shall only turn for a few minutes to a few of these salient points, without going into detail.

If I were asked to double the egg product in the state of Ohio I would not start out by increasing the number of fowls. There are already enough fowls kept upon the farm. If all the farmers kept only twenty hens and kept them well—kept them up to their limit—it would double the egg product of America in a single year. The average hen in Pennsylvania lays only seventy-one eggs a year; the average hen in Ohio lays more than that, but only eighty-four. The number of eggs per hen could easily be doubled, without any trouble whatever. We keep too much unprofitable stock. If I were given the contract to double the produce of Ohio I would not increase the number, but I would increase the product of the ones that we have. About the first thing I would want to do would be to go around to these farms and urge the disposal of the old crazy quilt flock A few years ago you all remember what a fad there was about the patchwork quilt—all colors, shapes and sizes of pieces, cut up this, that and the other way, and the one that had the greatest number of patches and the most colors was the one that won. In that same way poultry flocks would win that prize without any trouble. Have your flocks all of one color.

If I should find a flock where there were a dozen different varieties represented, each with a representative or two, and yet some one variety was more largely represented than the others—if I should find twenty females in that flock that looked like they had a large percentage of Plymouth Rock, I would try them, and I would then use for a male breeder for those twenty birds for the next year the very best male that I could get. But these breeders of fancy cattle here today will say it is all right in breeding fine cattle for beef, but you do not need to study that subject of breeding with the poultry. I want to tell you that there is no place and there is no line of live stock where good breeding will show more.

Suppose your flock is composed of Plymouth Rocks. Then by using a male bird, the very best one of that variety, you have the next year in the offspring, or in the new flock, fifty per cent. of its blood in the females for the hens of the next year. For that bird you may have paid three or five or ten dollars, if he were one that would score ninety or ninety-five. What would you do the next year? Well, you would get fresh blood. After twenty-five years of careful study of this subject I want to say to you that I believe this subject of fresh blood has done great harm. Instead of fresh blood I would use twenty females—twenty of those pullets—and I would mate them right back to that same bird, and I would then have in that offspring seventy-five per cent. of his blood.

But you would say that is incestuous; you are inbreeding. I am not half as much afraid of inbreeding as I am of crossing, and inbreeding will do good if it is in the right direction. If that male bird was a defective one it will do harm, but if he is right it will do good. There are many men here who well know what I mean when I say it has been the making of the thoroughbred horse and the Jersey cow.

That is the way in which I would start. In the first place your boy will soon take pride in the uniform flock you have put into his hands. In the second place you are getting into a position where you can feed with some definite idea in view, the feed which is good for the special purpose hen. You are getting into a position where you can begin to feed from the scientific standpoint.

The stock that you have for sale will bring a good price, even on the Columbus market, not so much perhaps as in New York. But the general market will soon become alive to its value. It is like the man who brought in five barrels of apples, which he sold in bulk at two dollars a barrel, or ten dollars. The man who bought them saw they were all sorts, but no very poor ones. They were of different grades, so he dumped them out and made up five barrels again. For the two barrels of the poorest he got just the same price per barrel as before, two dollars, and for the two barrels of medium he got three dollars each, so he had already the original price, and he had besides the barrel of extra choice apples, and they sold easier for four dollars than did the others at two and three dollars. So it is in the poultry business.

There are other ways of breeding up the flock. You may start by purchasing eggs of some variety. Understand, I am not advocating any particular variety. Like the dunghill, the mixed fowl has never made a success in a commercial way. So follow the man or woman who is breeding pure bred poultry of some kind and who is making a success of it. Don't let us go over the work that so many have done before. Let us take advantage of the experience of other people.

In the matter of feeding: Assuming that our pure bred animals of the dairy type and of the beef type in cattle have proved successes because of their great power of digestion, the man who has adopted beef cattle and makes a success of it does so because he has bred animals having the power to consume raw material, the coarse product, and change it into beef, and every dairyman whose cow has made a success has made it because she has that wonderful digestive capacity. You take the cow with which we were familiar twenty, thirty or forty years ago; her digestion was not so great; she would get hulky, but she did not consume large quantities of food. You could not make her consume more than four or five times her weight. But what can the well bred dairy cow—the Jersey or the Holstein do? She weighs a thousand pounds? You can make her convert of the raw material five thousand pounds, yes, six, seven, eight, nine, ten times her own weight; even twelve times her own weight. You can get her to consume ensilage, bran, middlings and other feeds which cost on an average less than a half cent a pound and she will convert that raw material into milk worth from a cent to two cents a pound. She is a good animal; she has large digestive power; she is a good converter.

These are the powers of the dairy cow, but I want to show you she is not in the business with the dairy hen—the little despised hen can discount her any day in the year.

This is no theory. It has been put into practice more than once. The five-pound pullet the first day of October, when she is five or six months old, when she is put into winter quarters, without any trouble at all has been made to consume ten times her weight, twelve times, sixteen times her weight, all in a year. But you say, "The man who will feed a hen sixteen times her weight, who will put eighty pounds of feed into a five-pound pullet in a year, is a case of 'a fool and his money soon parted.'"

Isn't that exactly what has made the dairyman's success? It is the hen that illustrates the doctrine of "sixteen to one," you understand. (Laughter.) She will consume sixteen times her own weight. That eighty pounds of feed on your farm or on my farm costs me eighty cents—a cent a pound. Then what shall she give you? The product she gives you in eggs is worth how much per pound? Eggs are worth just now twenty-four cents a pound, aren't they? Eight eggs to the pound. At any rate you are getting her to consume sixteen pounds of feed worth one cent a pound, and the eggs are worth at least sixteen cents a pound—for the product is worth sixteen cents a pound all over this state. I am willing to feed one cent a pound food if I can get sixteen cents a pound for eggs, and I am now getting nearly twice that.

Now take that quantity of feed. What has she been made to produce from the eighty pounds of feed? She has produced a good many times her own weight. Six times her own weight, or thirty pounds of eggs—two hundred and forty eggs—have been produced more than once. That is not the record by a great deal. I know the average in Ohio was only eighty-four, but there are many hens that have been made to produce two hundred and forty. They have been made to produce six times their weight, or thirty pounds of eggs, which, at sixteen cents a pound, would give a yearly income of $4.80, or $4.00 beyond the cost of feed.

One thing more along the digestive power of the hen. Is there an animal upon the farm that with three weeks' feeding can be made to increase forty per cent.? I claim there is not another of our domestic animals except the hen's son—which never sets, you know. (Laughter.) The cockerel, weighing five pounds, can be made to consume cheap feed, and inside of three weeks will increase forty per cent. A young man only three miles from me has been experimenting, and his showed over forty-five per cent. increase inside of three weeks. Not only will they increase forty per cent. in weight, but in marketing them they will increase in value. Those birds that were worth ten cents a pound, for five pounds, net, fifty cents per bird, can be made to weigh seven pounds, and they will bring all the way from twelve to fourteen cents per pound. They are experimenting along that line in New Jersey and Canada; they expect to get an advance of forty per cent. in price per pound and increase his weight forty per cent., too. That can only be done by careful work, but it can be done with the feed that you grow on the farm. I think you have heard here in this institute of giving the skim milk to the pigs, but there is no animal on the farm that will take the corn at fifty cents per bushel, the wheat at eighty and the oats at forty and produce half as much return as will the hen or her son, especially if the skim milk is added.

We think in the East we are away up in the poultry business. You can hardly talk to a New York audience at first and make them believe that the West knows anything about the poultry business. But we are consuming more than we produce. Near Pittsburg I saw a man telegraph Chicago for a carload of eggs—and it was not the first carload he bought—and he brought them right into his town and the farmers were coming and buying those eggs.

I found in the state of Missouri one firm had thirty different purchasing houses throughout the state. Two or three other firms were represented, buying eggs and poultry all over the state and shipping it to New York and Boston and London.

Those purchasers out there do what the farmers themselves ought to do. The farmers bring in their chickens in crates, all sorts together, and they bring their eggs in all colors, mixed. Those firms know better than to sell them that way; they separate the brown-legged and yellow-legged chickens. The yellow-skinned birds they dress and ship, where? To Boston. The Yankees have a notion about the old Plymouth Rock and the old light Brahma that have been familiar to New England. They like them; they think that brown eggs and yellow-skinned chickens are richer. There is not the sixteenth part of a hair breadth's difference as to the quality of the eggs, but they are willing to pay more, so they are shipped there.

The white-skinned, better fleshed, finer flavored birds they ship to a market that appreciates it. The French and the English people are very appreciative of a fine article of diet. You can go to the old world market places in France or England, or go into any of our large city markets and what, as a rule, will be bought first? They will never buy a yellow, thick-skinned bird. They prefer the white-skinned, white-fleshed, well-finished bird, and you can not get them to take these yellow birds. With the skim milk and oats—that is what makes the Scotchman—in three weeks they can make those birds look white.

There are three points of success in poultry, the breeding, the feeding and the housing. The housing is the point with which the farmers' wives are the most troubled. She knows what the poultry need better than does her husband.

These experts in live stock will tell you that an animal weighing, say a thousand pounds, must have a certain amount of area, a certain volume of air, a stall ten by ten by ten feet, a thousand cubic feet, or a cubic foot to the pound. You go in our poultry houses and you will find they have many cubic feet to the pound. They have practically all out-of-doors. The poultry houses often have the benefit of all the ventilation that is possible; the breezes blow through, and you can stick your hand- -almost throw your hat through the cracks.

Biddy asks three essentials in a poultry house—cleanliness, comfort and convenience. I shall speak only of this one now—the matter of comfort. To be comfortable you must not expect her to heat all the surrounding neighborhood. A hen requires a certain amount of area in order that she may secure the necessary exercise and keep her in good health. The limit has been found to be six square feet for a hen weighing six pounds.

I have built a good many houses in the last few years, and if I were building one hundred I would build them on a plan which I have, namely, 4½ ft. high at the back, 5½ ft. high at the front, 12 ft. wide and 12 ft. long for each flock of 24 hens—thus giving each hen a scratching area of six square feet and keeping the roof as low as possible, so as to save the heat generated by their bodies.

Hens will stand a vast amount of cold if they are only kept dry. A neighbor of mine who built houses on this plan told me yesterday that last week when the thermometer went down away below zero his pullets were absolutely comfortable in his house, with only muslin windows.

You know hens are like bald-headed men. How do we bald-headed men take cold? If we get a draft down the back of our necks we begin to sneeze right away, and the hen is exactly the same way. If we can prevent that draft from going down her neck she is not going to suffer, and if you can keep her dry she will not suffer. So I put my dropping boards 2¼ ft. from both floor and ceiling at the rear of the house and build them in tight so there can be no drafts of air. The perches being six inches above the dropping board, the heat is confined to a small area and the hens are comfortable.

Whenever a hen has frosted toes or comb she is not going to lay eggs. There is a sense of justice about her that will prevent you giving any return for that kind of treatment Her nature asserts itself and she will produce no eggs. Her food goes toward restoring the waste places.

On my premises the houses are all either thirty-six or forty-eight or sixty or one hundred and twenty feet long, and after experimenting for years, if I were keeping ten thousand instead of two thousand or fifteen hundred I would never put more than twenty-four together. I do not know why it is, but it is true; it is better to reduce from fifty to forty, from forty to thirty, from thirty to twenty—and twenty-four seems to be about right to give good results.

In the matter of food for the dairy hen or for the stock hen, I want for every bushel of corn four bushels of wheat, six bushels of oats and ten bushels of another feed that is worth more than either—that is bran.

I spoke of those three G's of a poultry house, but in the matter of feed I have four G's about which I like to talk, and those are the grits, grains, greens and the gravy.

The grains are the grains which I have mentioned to you, but a hen is just like a dairy cow, she wants something green, something succulent—cabbage, onions, beets, but especially finely cut clover steamed.

The third is the grits. The hen must have the power to do her own grinding and if you do not supply the grindstones she can not do it. Oyster shells and gravel will do to a limited extent, but get the best grindstone. You can afford to give her the same grit that costs me four dollars and eighty cents per ton in New Hampshire—the Mica Crystal Grit. If it cost twenty dollars I would still have it.

The grains, greens, grit, and then there is another, and that is the gravy. Some people want to call it something else, but I like the good old term "gravy." It means meat in some digestible form, and if she has it she will produce that egg with wonderful rapidity.

Last week I was talking over in Pennsylvania and I mentioned those four G's and somebody arose and said he would like to add another—gumption. The greens, the grains, the grits, the gravy and the gumption.

Mr. President, I have taken more than my time, but I want to speak for a minute on another subject, which is of great interest to me.

Very much to my surprise a few months ago I was appointed superintendent of poultry at the St. Louis Exposition. Other states are doing a great deal for live stock. I do not think Ohio has done very much yet. There are states having appropriations running close to one hundred thousand dollars. For instance, Missouri has given seven thousand dollars for poultry alone and has employed a man at fifteen hundred dollars to go over the state and work it up.

Ohio should do something in this matter. It occupies the great central position here, and standing out in the front rank in the production of so many things it should do something adequate. I would urge upon you that you get ready an exhibit of Ohio's products, live stock particularly—that is, cattle, horses, sheep, and do not forget the old hen.

Today the cows of Ohio produce fourteen dollars' worth of butter a year; the sheep of Ohio produce one dollar and eighty-six cents worth of wool per

year; the hens of Ohio todav—and I have shown that they are not doing what they should—produce one dollar and twenty-six cents worth of eggs per year. They can do a great deal more. They are entitled to consideration, and I hope Ohio will be well represented at St. Louis. (Applause.)

President Baldwin: We still have a little time for the discussion of this subject, and the ladies especially are invited to take part in the discussion.

Question: I would like to ask Mr. Orr if to produce that forty per cent. increase in weight you would feed the same feed as you would if you were going to produce eggs?

Mr. Orr: No, sir, not quite, and yet nearly the same feed, too. You would feed simply ground oats and skim milk, but the man who is making the greatest success is using about three parts of ground oats to one of barley and one of corn, also the skim milk.

Question: How about apples in the winter time?

Mr. Orr: They will eat apples. I thing beets are just as good and I would rather keep the apples for myself.

Question: You spoke of a two hundred and forty egg hen. What can be done by selection towards producing such hens?

Mr. Orr: Very much, sir. I never knew a hen that would produce that number, or two-thirds of that number, without good breeding back of her. You know the way to raise a boy is to begin with his great-grandfather, and you must begin that way with the hen, too.

Question: What age do you prefer?

Mr. Orr: Five months, six months. She should lay one hundred eggs by the day she is one year old. If you have not fastened that habit on her before that time it is pretty hard to do it.

President Baldwin: We will have music by the quartette.

A song, "Where are you Going," sung by the Williamson Sisters' Quartette. (Applause.)

As an encore, "Old Uncle Dan" was sung by the Williamson Sisters' Quartette. (Applause.)

Secretary W. W. Miller: Mr. President, for sixteen months I have been making an effort to secure the attendance of my longtime personal friend, Governor N. J. Bachelder, of New Hampshire. He promised me that he would be with us today and at two o'clock this afternoon I received from Cleveland this telegram:

"Am tied up here until 1:30 train. Shall I leave?" The one-thirty train had probably left thirty minutes when I received the telegram.

Since then I have this:

"Through the stupidity of a porter I was put in Saint Louis car and am left here. I shall return home. Am sorry to disappoint you.

"N. J. Bachelder."

This was sent at 2:34 so that we will not have the pleasure of Governor Bachelder's address.

President Baldwin: Therefore, we pass to the "Improvement of Our Live Stock," by George McKerrow, President of the State Board of Agriculture, as well as Superintendent of Farmers' Institutes of Madison, Wisconsin.

IMPROVEMENT OF OUR LIVE STOCK.

Mr. Chairman, Ladies and Gentlemen: I like the looks of you Ohio people. I believe you look just as good as a Wisconsin audience, and were it not from the fact that I feel the effects of a long night's trip I would think I were in Wisconsin.

The subject assigned to me at this time, that of "Improvement of Live Stock," is a very large one, broad as the agricultural endeavors and deep as the divine laws underlying animal life and its development; a subject that I feel I am not able to grasp or comprehend fully, a subject that we can not fully discuss here in the short time that we have for its consideration, but, like the Irishman at the Donnybrook Fair, I shall look for every head that bobs up and try to hit it with my shillalah.

I presume that Ohio conditions are very much like Wisconsin conditions. If we ask the question up in Wisconsin, "Do we need improvement along live stock lines?" we can very quickly answer it. Those of us who have traveled and been out upon the farms of Wisconsin know that there is a very large field for improvement along live stock lines.

When we see one of our so-called dairymen who contends that he has not the labor at command to take care of enough cows to eat up all of the grass he raises on rich Wisconsin lands, but must have some steers—trying to feed dairy steers for the Chicago market and selling them when fat at a very low price and at a loss, as he would know if he kept his figures—we say this man's stock needs improvement along the beef line, if he is going to be a beef producer. And then we are very often likely to say the fellow needs improvement, too, but as we can not control the breed of such dairymen, we have to try and control his education.

When we go into the stock yards at Chicago and spend a day or two looking over the different classes of stock and note the prices at which they are sold, we can see why our meat-producing animals need improvement, because we see prices varying with cattle, sheep, and to some extent with swine, varying so that often there is two dollars a hundred difference in the price for which these animals sell in the greatest live stock market in the world.

Why? Because nine-tenths of the breeders and feeders of these animals have not the correct ideal of what improvement means in live stock. When we visit our great shows or our smaller shows and see the herds and flocks line up for the award of prizes in the show ring and we look from the top of the line after they are placed, to the bottom, we generally see a wide difference between the animal at the top of the line and the one at the bottom, and we can safely say the lower ones even in the great show rings of our country need improvement. We will take it for granted then that our live stock does need improvement. If it is true that they need improvement, how are we going to improve them?

First I believe this improvement must begin with the men who are to handle the American live stock. All of you, no doubt, can call to memory some men who have launched out into the breeeding business, probably without experience, but with some money to spend, and then you can recall, as you count them over, and see how many of them have proved failures, what was wrong. Some hired the very best help whose services could be secured and they were still a failure. Why? Lack of ideal; lack of judgment in the men who launched into the business. I contend that every man who is to make a success along live stock lines, and who is to build up a herd or flock that will be a credit to himself, his locality, his state and the nation, must in the first place have in his own mind an ideal, a picture. If he is a dairyman he must have a correct picture of a dairy cow to build upon; if he is a beef man he must have the correct ideal of the beef animal pictured upon his brain; if he is a horseman he must have the right kind of a horse pictured there; if he is a draft horse man he must see a horse with a good, large frame, high heels, properly shaped pastern, clean hocks, strong loin, well muscled thigh, well muscled rump, well muscled shoulder, properly shaped, so that there is a strong back; he must have his neck and his head put on right; he must have an ideal of the right kind of a head, one that carries with it an assurance of good level-headed temperament; wide between the eyes and large in the eye. He must have a perfect ideal of this animal. If he does not he will surely make a mistake.

Your sheep man must have an ideal in his brain; not only that, but that ideal must extend right into the ends of his fingers in these days of expert sheep barbers, so that he can find the defects in the animal's carcass under the sheep's trimmed fleece. My friend Orr must have his ideal of the hen that is to produce two hundred and forty eggs a year.

How are we going to raise the ideal of the stock man, or improve him? By education. Where shall it begin? In his home, when he is a boy. Every farmer who would have his son remain upon the farm, and be a stock man—and by the way, I am here to say that successful farmers of the future must be stock men. There is no other way to keep up the fertility of our farms; to keep up our soil and keep it rich in fertility, and to do this you must have some kind of live stock on nearly every farm. If we are to keep the boys on the farm and make them successful farmers, we must make them good stock men and we must begin to build when they are young; we must show them the ideals.

Let us put into their hands when young the kind of literature to read and the pictures that will help build up these ideals. By this I mean we must take the best live stock journals and special journals along the lines that they seem inclined to follow. If your boy is a lover of sheep, get him a sheep journal; if he is a lover of horses, get him the best horse journal; if he is a lover of the beef animal, get him a journal that deals with beef cattle; if he is a lover of poultry, get him the best poultry journal, and begin his education at home.

And then I am one of those cranks who believe that his agricultural education should be continued in the public school. (Applause.) And when he gets through the public school, if possible, send him to your agricultural college (renewed applause) and then see that your agricultural college has an equipment of ideals that will help develop the right kind of a picture on his brain. (Loud applause.)

In my lines of work I have the privilege of visiting a great many of our agricultural colleges, and sometimes I leave these colleges feeling sad because I have been unable to see anything in their barns or yards that meets even the poor ideal that I have in my own brain.

Who is to blame? When I ask that question they tell me the state legislatures are to blame, because they won't appropriate the money. I have to say that the farmers of this state are to blame because they do not make the legislature do it. They do not approach the legislators at the right time and in the right way.

I was pleased the other day when I first came into your hall to see your stock men were organizing a live stock breeders' association. We have one in Wisconsin. Our last legislature heard from us. And we have a better equipment.

We had a better equipment than many of our neighboring states, yet the stockmen of Wisconsin felt that we did not have the proper equipment, did not have an equipment in keeping with the state of Wisconsin. The regents of our university, controlling our agricultural college, did not see fit in their general budget to ask that legislature for any special amount of money to put live stock upon our experiment station farm, but our stock breeders met in Madison in the first week in February and they framed a bill asking for an appropriation of ten thousand dollars to buy live stock for the Wisconsin Agricultural College, and after the bill was framed it was put in the hands of the agricultural committee of the assembly, to be introduced as their bill, because they were farmers and they knew what the farmers wanted, and most of them were liberal enough to see it themselves, and those that did not see the necessity of spending ten thousand dollars for live stock saw the necessity of listening to the live stock men of the state, and it went through the legislature without a dissenting vote.

If you farmers in the state of Ohio do the same thing you will get it. I am diverging now, Mr. President, and I will diverge a little more. I will say the live stock breeders' association went to the world's fair commission and said, "We want some of the money appropriated by the state of Wisconsin to make a live stock exhibit, or to help out;" and the commission said, "We have no precedent." Wisconsin appropriated money for the great show at Chicago in 1893; for the Omaha Exposition and for the Pan-American, the first a large amount and the last a small one, but not a single cent has been given out by this commission for live stock, and they said, "We would have to break the rule." And we said, "Break it;" and after consultation they wrote our president that all they could do was to set aside money enough to pay a man to travel over the state and drum up an exhibit of live stock for St. Louis, and we immediately answered that we would not accept that, but we called together the directors of the live stock association, appointed a committee representing each of the live stock interests of the state and this commission met the commission and had a lively session, and then we met them a second time. In five minutes they appropriated ten thousand dollars to help the live stock interests of Wisconsin to make an exhibit at St. Louis.

If the stock men will stick together in an association such as you have formed here, and let these people hear from you, if you do not get it the first time you will the second if you are as industrious as I think you are in Ohio.

Yes! Educate the stock men! Educate the stock men of today. After you have educated your boys up through these schools then stand by your fairs, for they are the great practical schools where your farmers and your stock men can more quickly and practically get an ideal than at any other place, because at our great state fairs we bring together the very best animals of all classes. A man who spends a week at a great state fair and is in the live stock business can not help but learn much and he will have his ideals moulded and perfected along the line of the class of stock in which he is interested and must go home with higher ideals than ever before.

And so I say stand by your fairs; stay by them; attend them; help them in every way possible.

Some think they are expensive schools, but they are not when you consider the number of people that can attend the fair, and the number of ideals that are scattered throughout your state that are helping to make your live stock.

As to the improvement of live stock: It is coming right down to the practical question: "How can we do it; how can we do the best; how can we do it the cheapest?"

First, by very careful selection. Have them standard and keep no animal upon your farm that does not reach up to your class, to that standard. Select! Cull!

In every herd of cattle that I go into, in every flock of sheep, in every bunch of horses, in every herd of swine and in most of the poultry yards as well—although I am not an expert in poultry—in every one of these different kinds of animals I find some not up to my ideal and which could be culled out, animals that can not be grown profitably, because they are not built right. The man who has the correct ideal should cull these animals; should select and select very carefully. The best, surest and cheapest way of improving our live stock is in the selection of the sires.

It is a common, an old adage, among stock men, that "the sire is half the herd or flock." This is true when you are breeding pure breds; where both sides will have an equal influence upon the offspring. But this statement is not true where one side is a scrub or a low grade; when you are just beginning to improve I am here to say that the sire becomes more than half your herd or flock, because all the breed improvement comes through this sire. Therefore, when selecting the sire to place at the head of a pure bred flock, or selecting a sire to place at the head of a scrub or grading herd or flock, we should exercise the most scrupulous care to select an animal which is as close to our high ideal as possible, and if we take the right kind of care of him and give him the right kind of a chance, the chances are nine to one that he will improve the herd or flock.

Don't let a few dollars at that time stop you from securing the best animal you can get. How many of us at that particular time hold a penny so close to our eyes that we can not see the dollars beyond?

In the horse business—and I have dabbled in it a little—I have seen farmers select the sire whose services they could secure the cheapest, congratulating themselves that his services only cost them a five dollar bill, and the owner even brought the horse to the farmer's place and saved them time in the busy season, when they could have secured the services of a first-class sire for ten or fifteen dollars more. I have watched these colts produced by the cheap sire alongside of those produced by the better sire raised upon an adjoining farm, and when these colts have been put upon the market have often seen them sell for four times as much as the colt that at the beginning cost ten dollars less. That was one case of holding close to the dollar and losing the hundred dollars.

These farmers must be educated along these lines.

While I am a firm believer in breeding up, I do not believe that is all. I believe that the feed cross is just as important a cross as the breed cross. I have seen some of the best of our animals by mismanagement in feeding and care turned into the meanest kinds of scrubs. And I am here to say that when you do make a scrub of a pure bred animal, by mismanagement and poor feeding, you make the meanest kind of a scrub on earth. And I can give you a receipt, and I won't charge you anything for it. To make scrubs out of your pure bred animals simply starve them enough.

Foods and methods of feeding have very much to do with the development of animal life. I have seen two pigs taken from a litter and put into one pen; two more from the same litter and put into another, and two more from the same litter and put into another. The first two were fed simply upon corn meal and water. Now, corn meal is a grand, good feed in its place, and water is the best beverage the Lord ever gave to man or beast, but when I saw these pigs a few months later they were little fatty squabs, with heavy jowls, fine bone, very fat and wheezy. Their two brothers in another pen were fed corn meal and water and wood ashes. Well, wood ashes is not a very good food to make pork you will say, and surely it was not, but there was mineral in those ashes, and when I saw these pigs at the end of a few months they had grown much larger in bone, better developed in a general way, and yet there was something about them that did not look right to me. And then I went and saw the third pair. They had been fed corn meal and skim milk in proportions that the scientists would say made a balanced ration, and they were beautiful pigs; good bone, well muscled, smooth and sleek, the outside covering of skin and hair indicating that the inside membranes were in a healthy condition and that those membranes would digest and handle the food well, and the pigs were evidence of it. No man, unless he knew the circumstances, would believe that those six pigs were full brothers to either of the other pair—there was in the few short months such a change in their animal form and structure. Then is it strange that some of our breeds of swine in the corn growing districts especially are fine boned little fat fellows? Not at all. My friend, Orr, here kind of poked fun at me by telling about the Scotchman being raised on oatmeal, and that reminds me of a little incident—(I never tell stories). This little incident took place with a friend over in Canada. I think this gentleman is the best posted man on the feeding problem of any of my acquaintances. He has been a practical feeder; he has been a student of feeding, and gives the plainest talk on the prominent principles of good feeding of any man that I have ever listened to. He is a Canadian, but they don't have all the good things in Canada, even if they do have him. He was talking before a very large and intelligent audience on the subject of human food; he was advising the people as to how he thought they should feed the boys and girls to have them grow and develop properly. (You will pardon me, Mr. Chairman, if I talk about the boys and girls, because they are the best stock we have on the farm, and their welfare is much more important than that of our colts, calves, pigs and lambs. (Applause.)

This gentleman had reached the point where he wished to try and demonstrate that food did have a great effect on the development of human life, and to illustrate he said, "Now, in your imagination if you will go with me away up into northern Scotland, where the climate is cold and rigorous and not well adapted to the best form of plant life, you will find there the little shaggy Highland cattle, no larger at three years old than the big shorthorn calf down in southern Scotland. You will find the small sheep up there which in no way compare with the border Leicestershire; you will find the horse up there very small, running down to the little Shetland pony of the North Coast, which does not compare at all with the great Scotch Clydesdale. But you will find up there men and women as large in bone and brawn and brain as the men and women on the lowlands of Scotland. And what then is the difference? Those people up there are so thoughtful of their children that they see to it that they are fed upon a well balanced ration, even if they have to import oatmeal from the lowlands to keep up this ratio But go with me in imagination down to China, where the climate is more favorable, where animal life has a chance to develop, and you will find those people as a class small of bone. In China they are so hard put to it for existence that they have to feed their children for generations upon a cheap starchy food, as they find it in rice.

At this point the speaker was interrupted by an Irishman back in the audience—(and they say you will find the Irishman everywhere). "How is it about the Irishman? He is pretty bony, brawny and brainy, too, as well as your Scotchman, and he raises his children on a starchy food, praties mostly, if you please." The speaker said: "I am glad ye axed me that question because I am an Irish lad meself and pretty well grown on the old sod, and I want to tell you, sir, that the Irishman is smart enough to balance up the starch in the praties wid the protein in the skim milk and the buttermilk." (Laughter.)

If there is a lack of growth in any of your Irish friends you can say there was a litte dearth of buttermilk when they were being grown.

But food does have an effect, and that is something that the breeder must ever have in mind. If you are up in the north, the same as we are in Wisconsin, where it gets twenty or thirty degrees below zero, then have fit conditions that will make your old hen think it is summer all the time; have food conditions so that you make your growing calves, colts, lambs and pigs believe it is summer time all the year. You can have succulent ensilage; you can have a balanced ration; if you haven't oats enough, balance with something else; give them plenty of mineral and protein. Then you can be like the Irishman, grow your corn, grow your clover and alfalfa, grow your narrow and your wide rations that are cheap and bring them together. I would prefer to have two or three or four different lines of foods brought together for varities' sake, because when I feed I like variety.

There are lots of farmers—and I am sorry it is in Ohio as in Wisconsin—who say, "How shall we feed the animals varieties; they are so far apart the animal forgets about it?" Why, if I were to go home next Saturday a little late for supper and my good wife dishes up for me four or five dishes and when I look at them I see here a baked potato and next to it potatoes in cream, and then some Saratoga chips, all of those dishes are filled with something the basis of which is potato, and I at once say to my wife, "Are you going to have me make my supper out of potatoes?" and she will say, "Yes, I have been thinking it is pretty cold weather, and I am afraid the frost will get into our cellar and frost the potatoes, and so I will feed them out while they are good." (Laughter.) "When the potatoes are used up then I will feed you upon meat, because the hot weather might come and spoil the meat that we have cured, and when the meat is used up, then we will have the wheat to make flour and bread." I would say at once, "The poor woman has gone crazy while I have been traveling around talking to farmers." But I have had farmers talk just as crazily to me. That is, in Wisconsin—of course, we do not refer to any Ohio people. I have had farmers tell me that their stock did not look very well along towards spring, and it developed that in the winter they had some marsh hay that they had to feed out while the stock would eat it and then after a while, after the hay was fed out, they had corn fodder and they wanted to get that fed up before it got warm weather, because the stock would not then eat it; and in the spring they were feeding them some grain and good hay, but still they did not do well.

By feeding the poorest feed first they had injured the digestion, and I am here to say that those animals will never be as good animals as they were before the change of feed. Some of us do very foolish things, but we must go back and criticise our own actions and then start right. It is pretty hard for a fellow to stop and censure himself and discover his own failings and start anew, but let us all do it just the same.

I am here to say that it has been pretty well demonstrated that if you do not properly care for an animal when it is young, you have permanently injured that animal's prospects in life. By this I mean that the animal must be fed so that it will develop its bone and its muscle right along.

You may grow an animal so that it has some bone and a little muscle and when it is older force fattening foods into it and develop a great deal of fatty tissue and have a plump-looking animal, but that animal will always be deficient in muscle and bone.

Every man who will improve his live stock, especially if he is breeding pure bred live stock, must pay careful attention to the development of his animals along the line of feed, for no matter how he breeds if he feeds wrong his efforts are all lost. The rich blood for which he pays his money is all thrown away unless he couples the feed cross with the breed cross.

The health of our animals is something that we should carefully look after. You ask a veterinary surgeon and nine out of ten will say the unhealthy condition of live stock is caused by the farmers and stock feeders not feeding right, and their animals go wrong from improper feeding —having either too much feed or too little feed, or being fed irregular. Having too much heavy heating food dries up the whole digestive system. That is where the animal needs its succulent food.

I do not know how it is in Ohio, but in Wisconsin we have tuberculosis among our cattle, and as I have been a member of the live stock sanitary board for the last three years I know something about it. We are trying to clean it out—not in a wholesale way, but by careful restriction and careful measures. I have seen some of the best dairy animals in Wisconsin sacrificed. I have seen them go into early graves when if they had only been guarded against the inroads of this disease they would have added thousands of dollars to the value of the dairy interests of the state.

Other diseases might be mentioned, too; some that get in and take away some of our best animals, and if we are looking for improvement we must guard the health of our animals in a general way.

I did not come down to Ohio to discuss any particular class of animals. I have discussed this subject in a general way. Not in the way I would at a Wisconsin Farmers' Institute, because I look upon this audience as a representative audience of the best thinking farmers and breeders of the state of Ohio who are past the A, B, C stage.

If I can say anything here that will set you thinking along general lines, you can get down yourselves to the detail side of the question.

As I said here yesterday, I am a firm believer in discussion. I believe it is one of the things which has made this American nation the great nation that it is today, standing out pre-eminently in front along the lines of educational and financial development. One of the principal reasons for this is that we are a discussing people. We do not always agree with each other. We pitch into each other. We cross swords and discuss our own ideas and get new ones.

Therefore, I would suggest, if there is time, Mr. Chairman, that your people pitch into me—you do not need to agree with me and I will not get cross over it—and if you do not differ from me, ask questions.

I thank you. (Great applause.)

President Baldwin: There is considerable time to discuss this question, or for questions, if no one cares to discuss it.

Question: Mr. McKerrow, I would like to ask you if in the third pen of the pigs you mentioned, ashes were fed, also?

Mr. McKerrow: No, sir. The pigs in the third lot I spoke of were fed some corn meal and some skim milk. That was their two rations, well balanced. They grew and were well developed pigs.

Question: Will you please tell us the ratio for the feeding of rations to a growing animal?

Mr. McKerrow: Why, I think the ratio of one of protein to six of carbohydrates is about right.

Question: The average?

Mr. McKerrow: Well, one to six for an average growing animal. Of course there are several others. There is no ration for the very young animal that is better than the mother's milk when skimmed. My plan is to use some cooked flaxseed for calves and oats as soon as they will eat them.

Question: Why not feed corn meal instead of flaxseed?

Mr. McKerrow: It is not so easily digested. You would have to feed your calf a little too much corn meal.

Question: Do you feed whole oats or ground oats?

Mr. McKerrow: For the first six or eight months I prefer whole oats; after that I begin to grind them, but you must watch these animals if you are going to get good results; you must study the animal as well as the feeding tables.

Question: How is ensilage as a horse feed?

Mr. McKerrow: We are very well satisfied with feeding ensilage to horses, but understand we do not make them live on it, we only feed it lightly. We have been feeding no carrots to our horses for the last four years and I think their condition is equal to their condition when we did feed carrots.

President Baldwin: We will now have some music by the quartette.

A song, "Little Boy Blue," sung by the Williamson Sisters' Quartette. (Applause.)

President Baldwin: Our next number on the program is "Farmers' Institutes in the United States," by Professor John Hamilton, Farmers' Institute Specialist, United States Department of Agriculture, of Washington, D. C.

FARMERS' INSTITUTES IN THE UNITED STATES.

Mr. President, Ladies and Gentlemen: Before taking up the subject assigned to me I want to say that there never has been a time in the history of this country when there has been as great and general an interest in agricultural development as there is just now. The interest and attenedance at this meeting that you have been holding is a sample of what you will find in almost every state. In the South particularly the people are waking up to the realization that agriculture is their great industry, and that advanced agriculture is the only kind which can be engaged in today with profit. Down at Knoxville this last week I was at a meeting in which the eastern section of the state of Tennessee was represented, and there were present 1,200 farmers come up to their Industrial University and Agricultural Experiment Station to talk about agricultural improvement and to get information as to the best methods to be adopted in order to bring this about. They remained at the university for almost a week, were greatly interested during their visit, and seemed to appreciate the opportunities that their university and experiment station were presenting to the agricultural public in the way of advanced agricultural instruction.

We in the North are perhaps too much inclined to believe that we have about all the agriculture that is worth talking about in this country. A trip through the Southern states will do much to dispel this illusion. South Carolina a short time ago came up to her Agricultural College with 2,000 representative farmers and they stayed for three days, paying their own expenses and attending the course of instruction that the officers of their Agricultural Experiment Station and the faculty of their Industrial University had prepared for that occasion. Mississippi last September sent up 400 of her most capable citizens to the first round-up meeting of her farmers' institute workers; a body of highly intelligent men, the best that the state possessed.

In all of these instances these Southern states did what you are now doing here, convened at the headquarters of agricultural information in their several states in the belief and with full expectation that their agriculural college and experiment station are engaged in a work in behalf of agriculture that it is important for every progressive farmer to understand.

As agricultural people we are rapidly coming to realize that we are no exception to other classes of workers, whether in industrial or professional life, that we, too, must first know things before we are competent to undertake the doing of them, that our ideals and standards must be far above the general level if we wish to attain the highest success. Mr. Orr has just illustrated this in his story of the hen. Many farmers are of the opinion that a hen is doing her best when she gives him 50 or 60 eggs a year. That the number of such farmers is not few is evident from the fact that the average number of eggs laid by the hens of the United States is only 66 per annum. Compare this with a flock of over 900, whose owner told me not long ago had averaged during the previous year 209 eggs apiece. The thing that a 66-egg hen most needs is the same as that of every other languishing interest, namely, a competent boss. When you see a run-down farm you can fairly conclude that it reached its present condition, not of necessity, but by reason of its having had one or a series of incompetent managers. Other industries years ago came to understand that their success as producers in the strenuous competition that has set in in modern times must depend altogether upon the character and qualifications of the managers in charge of their work. Years ago they felt the need for improvement in this direction, and now they are coming up to the great industrial colleges and universities year by year with requisitions for men. Their cry is for capable men, managers, skilled engineers, well equipped scientists who are capable of solving the problems that confront them, who are able to tell them what to do in order to improve their product and to maintain supremacy among the industries of the world. So urgent is their call that not infrequently under-class men are appropriated long before their graduation day, and the colleges now have difficulty in holding their students until they have had time to read their graduating theses.

Agriculture is just waking up to the fact that competent men are also its greatest need; that it needs educated men, men who are competent to solve the problems which confront it. We are coming to a realization of the fact that agriculture, instead of being the simplest and most easily comprehended occupation, is the most difficult business with which we have to deal, and that farmers are confronted with problems more abstruse than those which oppose progress in any other industry.

Up until within fifty years men were just as well educated, so far as intellectual training is concerned, as they are educated now. The classical colleges turned out by the thousands men who succeeded in life. Some of the greatest and most useful men that our country has had have come out of these classical colleges. All over the South the great estates were owned for the most part by men who were graduates of the schools of their time, men, who, if they had chosen the law, or had selected the practice of medicine for their calling, would have become eminent in their profession, or if they had entered the ministry, would have been acceptable preachers in any pulpit, and yet when they took up agriculture as a profession they failed. All that they succeeded in doing was simply to rob the land, to take off the cream, and when the soil became exhausted their great problem was not, How shall we restore the old plantation to its original productive power, but where shall we get other new and virgin lands to till? These men, notwithstanding their superior intellectual accomplishments, failed as agriculturists, whilst in all of the other learned professions of their time they were qualified for highest success. Unquestionably there was something the matter, not with the men, but with the kind of education that they had received. These proprietors had abundance of general capacity, but they had not the special kind of information necessary to secure success in farming. And thus we have the great country that lies south of us depleted of its fertility and the men of this generation are now taking up these impoverished soils and trying to restore the land to profitable production and endeavoring to remedy the ills that their fathers entailed upon them.

The agriculture that we need in this country in the future is not the kind that we have had in the past, under whose methods the lands grew poorer and poorer year by year, but it is an agriculture that occupies and tills the soil in such a way as to cause it to produce profitable crops and gradually increase its productive power generation after generation for a thousand years. The Almighty, in preparing the earth for man's abode, stored the soil with a large amount of easily abstracted fertility, not that men might appropriate it in a single lifetime and then leave it worthless to their successors, but the purpose manifestly was to furnish a possession that should sustain life through all of the ages that the world is to endure, and which, by judicious culture and intelligent control, should enhance in value and productive power as population multiplies and as the needs of man increase.

This means more than the mere knowledge of how to scratch the soil, to scatter seed, to keep down weeds and reap the crops. It demands that the man who occupies the land shall know its character and the laws that control in the growth and development of vegetable and animal life. In short, it requires that the farmer shall be an educated man, trained in all that pertains to the mastery of nature and the comprehension of nature's laws. His task was set in Eden. He is to "till and replenish the earth," or, to paraphrase the sentence, he is to till the earth in such a manner as to continually replenish, not exhaust it.

The farmers' institute, Mr. President, stands for this kind of education—knowledge of how to replenish the earth, to increase the productiveness of the soil. A vast amount of agricultural information has been secured, but unfortunately for our industry much of it is lying in pigeonholes, in waste baskets, or is stored away on dark shelves and is not read. The fact is that most of our farmers—and I am not referring to you, because you are above the average—most of our average farmers do not read. Many even who have had academic training do not read. They have lost the reading habit. The physical exercise which agriculture requires tires the farmer, so that when night comes on, about the only time he has to read, he has grown sleepy and wants to go to bed. His duties compel him to get up early, particularly during the season of summer work, and when winter returns and leisure might again be had to read, he is in much the same condition as the man who has not attended church for several months. He has lost interest in the service. Inclination for study, in like manner, as the years go by, gradually, almost imperceptibly, disappears. The man loses the reading habit.

If this is true of the average farmer, what about the great multitude whose lives lie below the average level, who know very little except how to hoe and hold a plow or drive a horse, who have never read, and who have no knowledge of their art beyond the simplest operations in common use in the community in which they live? If those who once had the reading habit, but have lost it through disuse, are sadly in need of help, how much more needy are the men who have never had access to the stores of knowledge that science has accumulated in aid of agriculture and are consequently totally ignorant of any method save their own?

The farmers' institute is organized to help such men. It is organized to carry to the people who do not read valuable information by means of men who have read and tested the truth of the statements that they make.

In order that you may know the extent and quality of this instruction as it is now given in the institutes throughout the United States, you have only to acquaint yourselves with the character of the teaching force that is engaged by the State Directors in carrying on this work. Over 900 men and women were in the employ of the State Institute Directors in this country last year, teaching agriculture to farming people. I have the personal history of 623 of these men. Two hundred and eighty-seven of them bear college degrees, 138 have taken partial college courses, 108 have had the advantage of normal or high school training, and 90 were men who had ordinary education so far as the schools were concerned, but who had special advantages for acquiring information with regard to the particular subjects which they are called upon to teach. It is a large, effective and capable force, equipped with the best information that is in existence, and is giving it to the farmers face to face, without money and without price. These teachers have been doing throughout the country what has been done here this afternoon: First, presenting the facts for the consideration of their audiences and then submitting to questions on the part of practical men respecting the details which may not have been made entirely clear, or as to the soundness of some proposition which they have made. All over this country this instruction is being given.

The farmers' institute movement is of comparatively recent origin. Scarcely twenty years old in some of the states, in others the institute has only just begun. There were, it is true, some institutes in existence longer ago than twenty years, but the system as we now have it is quite recent. Their marvelous growth is shown by the fact that institutes are now held in all of the states except three—Arkansas, South Dakota and Wyoming—and in all of the territories except Alaska, Porto Rico and the Indian Territory, and last year over 900,000 farming people were reached through the instrumentality of this modern agricultural school.

The keeping of our agricultural population, our best people, in the country districts is one of the great economic questions with which we have to deal. A neighboring state, Pennsylvania, had an experience during the decade from 1890 to 1900 which is perhaps not exceptional among the great body of Eastern and Middle States. The increase of population in that state during that decade was 1,044,101. Of this increase 1,020,769 persons located in the cities and incorporated towns, and only 23,332 in the townships of the state. The increase in the townships was almost wholly in the lumbering and mining districts, so that if accessions to these are taken out, the figures show that there was an actual decrease in the population of the purely agricultural districts during that decade of about 60,000 persons. This flow from the country to the city ought to be arrested, and will have to be stopped if our nation is to continue prosperous and free.

The superficial observer is apt to conclude that the cause of migration from the farming districts to the more thickly populated sections is due to the unprofitable character of the farming industry, and very often this same view is taken by the very men who have accumulated all that they possess by the cultivation of the soil. About two years ago, in talking with a well-to-do farmer in another state, the question of the condition of our farming people was discussed. In the course of the conversation he remarked that farming was a poor business at best. In order to test this proposition from a practical standpoint, I asked whether he would trade his business with the blacksmith in his community, and he at once replied that he would not. Then the same question was put with regard to the carpenter, the stonemason and the shoemaker, and he would exchange with none of these. I then asked him if he would trade his business with that of the country storekeeper, or of the minister of the Gospel who served in a country church, or with the practicing physician of his community, and in each instance he replied that he would not. I then asked him if, after taking out four of the leading lawyers in his town, where there were more than twenty practicing attorneys, he would exchange his business with any one of the remainder. After a little reflection he replied that he did not think he would. His own testimony, based upon personal knowledge of the condition of all of the trades and professions that had been presented, placed his occupation as a farmer superior in its profits to any one of these. It is the best business we have. It may not be profitable for you or for me, but it is profitable to the great majority of farmers nevertheless. In the year 1902 our exports were over $1,300,000,000. Of this $851,000,000 were furnished by agriculture. After supplying an abundance for an entire year to 80,000,000 of people here at home and feeding all of the horses and cattle, swine and poultry, maintaining our people in a way that no other nation upon the earth has been able to equal, we have out of our great abundance a surplus to send abroad of over $800,-

000,000 worth of products to supply the needy in other lands. Farming is a good business, as these figures show, and in recent years it has been making the American farmer rich. We get the story of its being a poor business, not from the successful and well-to-do, but from those who do not understand their calling and are not willing to take the trouble to learn new methods or avail themselves of the scientific information that now abounds on every hand, which, properly applied, will work a revolution in their art.

The institute stands for progress in agriculture. Its ministers preach a gospel of hope, glad tidings, good news to agricultural people in every farm home, of success now and of greater possibilities for the intelligent farmer in the years to come. The teachers are selected from among those who have succeeded and are able to tell others how this success has been attained. Many of them are experts, who, after years of study and experiment, have worked out the problems that confronted them and have mastered the difficulties that were insurmountable to other men. These experts are being sent into every hamlet and are there explaining to farmers the mysteries of agriculture that contribute to success in all of the many diverse lines of which this industry is composed. The fundamental fact upon which the institute is founded is that before success is possible men must know. Does the kind of information that we need exist? If so, where can it be had?

Until about fifteen years ago there was comparatively little reliable agricultural literature to be had in this country. We had books on agriculture in abundance, but very few that were worth our reading. We had agricultural journals, but they were edited for the most part by city men, many of whom had never had experience in the practical work of cultivating the soil. The literature that has changed our methods and improved our agriculture has come to us within the past twenty years. The most of it has come out of the sixty agricultural experiment stations of the United States, whose work of investigation along scientific lines by a corps of over 700 men and women, conducted in laboratories, fields, orchards, gardens, granaries, and among our flocks and herds, has resulted in a vast accumulation of information of inestimable value to the farming people of this country. These results have been collected and published in bulletins, which are being distributed among our farmers, the mailing lists of these institutions now embracing over 500,000 names. In addition to these sources of information, we have the National Department of Agriculture at Washington, equipped with a force of 4,200 men and women, all engaged in the work of furnishing information to the farming people of the United States. Of this number over 1,900 are scientists, or scientific assistants, whose specific work is to discover, investigate and distribute among the people such information as may be of value in improving the agriculture of this country.

This great department began its work in 1862 with a force of nine men and an appropriation of $60,000. It now has over 4,000 employees, as I have stated, and its appropriation last year was about $5,500,000. The work which it is doing can best be seen in the publications which it issues year by year. Last year 938 different documents were printed, comprising 45,000 separate pages, equal to 45 volumes of a thousand pages each—a great library of agricultural literature of most valuable character. During the year there were 11,698,000 copies of these publications printed for distribution, and 6,600,000 were bulletins specially prepared for the use of farmers. How many of our farmers read them? The fact is that a great many do not read at all, and consequently lose the opportunity profiting by the valuable information. which these publications contain.

If our farmers would read agricultural literature, particularly such as is prepared by the experiment stations and the National Department of Agriculture, the effect upon agricultural production would be most marked. I know of no better practical illustration of what a little reading will do for an agricultural community than the results of an experiment that was made by ex-Governor Hoard in my state. Governor Hoard has held to the belief that reading makes a great deal of difference in the capability of a man to do things. He selected for the demonstration a creamery at Montrose, Pa., that had fifty patrons. An investigation showed that twenty-five of these patrons took an agricultural newspaper and twenty-five did not. A man was employed who kept a record of every cow in every dairy in that community and of the amount of milk sent in from each man's dairy to this creamery at Montrose. The twenty-five who read an agricultural newspaper averaged per cow $50.23 a year, and the twenty-five who did not read averaged $32.95 per year. That is, the gain of those who read was $17.28 per cow. The men who read fed their cows $35.15 worth of feed, and the men who did not read fed their cows $32.29 of feed, so that the readers made a clear net profit over all expenses of $15.08 per cow, and the non-readers made a net profit of 66 cents per cow. This illustrates what knowing how, what a little reading will do in a single industry. Suppose similar information along this and other lines were carried out by institute lecturers over this great American nation, what would be the probable result? There is no estimating the beneficial effects that the spread of such knowledge would secure, as there is no telling how much our land is capable of producing if we but knew its character and understood the best methods of developing plant and animal life and growth.

I have made an estimate of what a slight increase in the yearly products of the state of Pennsylvania would add to the farmers' income. Five dollars a head would put $3,000,000 on the horses of that state; $5.00 apiece on mules would add $146,000; five cents a duck would bring in $17,000 additional; five cents a chicken would bring in $519,000. Add six bushels to the twenty-three bushels of barley now the average per acre in that state; add five bushels to the average of fourteen of buckwheat; ten bushels to thirty-three and seven-tenths, the average per cent. of the corn crop in Pennsylvania, and similar slight additions to the other crops, and the aggregate would amount to $33,000,000, added to the products of a single state by just a little education distributed all around. These are all but slight additions. No great scientific knowledge is needed to add the amounts that have been stated. It means simply being careful and knowing how to do things reasonably well. A similar computation for the United States discloses the fact that by adding to each crop the moderate increase just given, our present agricultural exports could be increased by $1,400,000,000, making the grand total of agricultural exports of $2,250,000,000 each year. All of this vast sum would go into the pockets of the farmers of the United States.

The farmers' institute, with its 900 state lecturers, assisted by several thousand local teachers, is the great instrument that is to effect this change, that is to spread abroad to thousands who most need it the information that has accumulated during the years that have passed that will enable our farmers to add materially to their incomes year by year, and at the same time teach them how to steadily improve the quality of their lands, notwithstanding the drain occasioned by continually increasing crops.

President Baldwin: Is the chairman of the committee on credentials ready to report?

REPORT OF COMMITTEE ON CREDENTIALS.

Your committee find that W. A. Russell, President of Pike County Agricultural Society, is entitled to represent Pike County in this meeting, and that Mr. W. N. Strong, delegate of the Lucas County Farmers' Institute, is entitled to represent Lucas County in this meeting.

A. J. CLARK,
G. H. HYDE,
Committee.

Mr. Hyde: I move we adopt the report.

Motion seconded.

Mr. J. E. Wilcox: I represent Lucas County Agricultural Society as president. We have an agricultural society and have had for years. We have always kept it up and I think we are entitled to recognition. I think we did not hold a fair for the last two or three years but we kept the society intact.

Mr. Hyde: In support of our report I will say we investigated this question as thoroughly as we could and patiently took all the testimony, and it appears to your committee that there was no real de facto agricultural society in Lucas County, that came up to the provisions required.

Motion carried.

President Baldwin: We will now have the report of the Committee on Resolutions.

Hon. R. O. Hinsdale: Mr. President and members of the Board. I am well aware that the report of the committee on resolutions coming at the end of the convention is always looked upon as an unmitigated nuisance, consequently your committee has made it very brief, and we are going to prove to you the untruth of an old adage which says there is nothing new under the sun. We are going to prove to you that there is something new under the sun. We have a report of the committee on resolutions without resolutions.

Whereas, the agricultural interests of our state are among its largest, there being more people engaged in them than in any, if not all, others combined, at the same time being large contributors toward defraying expenses of all of the varied and useful institutions of our state, we express confidence in our present legislature and state administration, that they will give such recognition of the needs of the institutions, which are directly established and equipped for the furtherance of the cause of agriculture, as to liberally provide them with the needed funds to continue and increase their facilities of usefulness. We appreciate the interest taken in, and desire of the advancement of the cause of agriculture, as expressed by our honored Governor in his address to us this morning.

R. O. HINSDALE,
J. J. SNYDER,
Committee.

And thereupon it was moved that the report of the committee be adopted. Motion seconded and unanimously carried.

President Baldwin: The next will be music by the quartette.

A song, "Home, Sweet Home," sung by the Williamson Sisters' Quartette. (Applause.)

President Baldwin: The next business before this convention will be the election of two members to serve upon the State Board of Agriculture for the term of five years.

I will appoint as tellers, Mr. George W. Carey, of Warren County, and Mr. R. Y. White, of Muskingum County.

And thereupon a secret ballot was taken, resulting as follows:

Mr. J. W. Fulton received 2 votes.

Mr. S. H. Ellis received 8 votes.

Mr. D. T. Blackburn received 10 votes.

Mr. J. E. Russell received 16 votes.

Mr. E. Ammon received 22 votes.

Mr. L. P. Bailey received 39 votes.

Mr. E. L. Lybarger received 46 votes.

Total number of votes cast 72; necessary to a choice, 37.

President Baldwin: Gentlemen, you have made choice of Mr. E. L. Lybarger and Mr. L. P. Bailey as members of the State Board of Agriculture.

(Loud cries of "Lybarger," "Lybarger;" "Speech," "Speech.")

President Baldwin: I have the pleasure of introducing to you Mr. E. L. Lybarger, who will serve you for the next five years.

Hon. E. L. Lybarger: Mr. Chairman and Gentlemen: It was only last Friday we decided to come into this race and contest for this honorable position, consequently I did not prepare a speech for this purpose for two reasons. One, that I did not have time, and another that I was afraid what I might prepare to say would not be applicable to the occasion.

I know that some of you want to take trains; I know the most of you are ready to go home and that you are not here at this present time to hear any long exhortation from anybody, after you have listened to the eloquence that has been displayed here this afternoon, so I want to briefly say to you, gentlemen, that I thank you most heartily for the confidence you have had in me in casting your votes in the direction you have, and I want to say to you that in all of the undertakings of my life, in all the positions of trust which the people have conferred upon me, I have endeavored to discharge the duty to the best of my ability and have uniformly, I believe, been to some extent at least successful. I shall endeavor to find out my duties as a member of the State Board of Agriculture and endeavor to the best of my ability to vindicate the judgment of the gentlemen who voted for me.

Again thanking you for this honor, in closing I will say I hope at some future time, when you have not been listening to speeches, I may be able to deliver an agricultural address. (Applause.)

(Loud cries of "Bailey," "Bailey," "Speech," "Speech.")

President Baldwin: Gentlemen, I have the pleasure of introducing to you, Mr. Bailey, who will serve you for the next five years, also. (Applause.)

Mr. L. P. Bailey: I feel inclined to relate a little experience which happened to me quite a number of years ago.

I had a very worthy neighbor, whom my friends and myself thought we would honor on his fiftieth birthday by giving him an arm chair. It fell to my lot—for some reason, I don't know why—to make the presentation speech. I was very nervous on that occasion. I wanted to get up a speech that would do credit to myself and credit to the occasion and be a fitting tribute to the honor of the gentleman. I feel very much today as I did then. I am under considerable embarrassment and I feel a little nervous. I was very nervous at that time. I remember in going to that place one of our neighbors —an old man—was subject to fits. Well, now, I will be candid with you here. I wished at that time, while I was going there to that meeting, that that neighbor of mine subject to fits would have a fit so that I would not have to make a speech. I thought if he did not have a fit I would have one.

And so when friend Lybarger got up to speak here I thought I might make a speech, but after he made such an eloquent appeal and thanked you so eloquently for your support today I felt more like keeping still.

I can only say that it has been my ambition all my life to associate with the class of people a little above myself. I have attended the state institute held in this city for almost twenty-five years. I also have attended the state fair almost every year. I have noticed the great state farmers' institute coming up from, perhaps, not more than fifty in attendance in the beginning to the great audience you have seen here this year. I take great interest in the development along agricultural lines.

I have seen the Ohio State Fair come up to what it is today, one of the greatest expositions of live stock and industrial enterprise in the world.

It is a laudable ambition for any man to desire to become a member of the State Board of Agriculture. Not that I can add anything to it, Mr. President, but I hope I may not be a load upon it. I will do the best I can and

> "He who does the best he knows, does well,
> Acts nobly; angels could do no better."

I certainly heartily thank you from the bottom of my heart for your kind votes. I thank you. (Great applause.)

President Baldwin: Is there any further business; is there any miscellaneous business?

No further business being presented, an adjournment was taken.

Fourteenth Annual Report

OF

FARMERS' INSTITUTES

Held in Ohio during the winter of 1903-1904.

This, the fourteenth annual report of the Farmers' Institutes in Ohio, has been prepared under most encouraging conditions. Two hundred and forty-seven institutes were appointed to be held during the season beginning November 30, 1903, and ending February 27, 1904. These covered every county in the state. Two of the number were not held because of epidemic disease, and a third, the one appointed for Rimer, was postponed and held later at Continental. Reports show the institutes to have been well attended, interesting and instructive. With a good staff of lecturers employed by the State Board of Agriculture, a strong organization and a large number of willing workers on the part of the local institutes, the situation is very promising and cannot fail to improve still further. The board takes great pleasure in the fact that the work has been thoroughly systematized in Ohio and, at the same time, circuits and appointments have been so arranged as to minister to the wants of each community as far as possible. The practice in some states of beginning in one corner and going steadily through the state, county by county, up to the remotest portion from the place of beginning, has not been followed in Ohio, but institutes have been so arranged that it is quite possible for a community to derive benefit from two or three different institutes during the season, the home institute in one month and, perhaps, in the next month a meeting in an adjoining county, or a different neighborhood in the same county. This method multiplies the good obtained and increases the interest and comes as the result of considerable care and thought in making up the circuits.

The State Farmers' Institute held in Columbus, January 12 and 13, 1904, was replete with interest and was largely attended. It is to be regretted that a greater number of institute officers and members were not present, for it would have been well worth their while had every society in the state been represented. Many valuable papers were presented which appear with this report and ample time was given for discussion, thus bringing out many important points.

In compliance with law and custom, there is published herewith a detailed statement of moneys received and expended and institutes held for the season; also a report of independent institutes from which reports were received, and many papers read at institutes on subjects of interest to farmers and their families. Many papers were necessarily returned to the writers because of the publication committee having received a number on the same or similar subjects as others which had already been accepted, or because of want of room in this report. The committee endeavors to select papers embracing as wide a range of subjects as possible.

In conclusion, the State Board of Agriculture wishes to return thanks to the press of the state for its aid and to all state and institute officials who have assisted in bringing the Farmers' Institute system to its present encouraging status.

The Ohio State Board of Agriculture.
By WELLS W. MILLER, Secretary.

Columbus, Ohio, March 12, 1904.

FINANCIAL STATEMENT.

The following statement shows the receipts and disbursements of the Ohio State Board of Agriculture on account of Farmers' Institutes per capita, being the State Board's share of the six mills per capita, sections 3713-1 to 3713-6, inclusive of the Revised Statutes of Ohio.

RECEIPTS.

Amounts collected from the counties on the basis of three mills per capita, being the State Board's share of the six mills per capita allowance provided by law for the maintenance and support of County Institute Societies in Ohio:

Adams County	$ 78 98
Allen County	125 00
Ashland County	63 55
Ashtabula County	125 00
Athens County	116 19
Auglaize County	93 58
Belmont County	125 00
Brown County	84 71
Butler County	125 00
Carroll County	50 43
Champaign County	79 93
Clark County	125 00
Clermont County	94 83
Clinton County	72 61
Columbiana County	125 00
Coshocton County	88 01
Crawford County	101 74
Cuyahoga County	125 00
Darke County	125 00
Defiance County	79 16
Delaware County	79 20
Erie County	112 95
Fairfield County	102 78
Fayette County	65 17
Franklin County	125 00
Fulton County	68 40
Gallia County	83 75
Geauga County	44 23
Greene County	94 84
Guernsey County	103 27
Hamilton County	125 00
Hancock County	125 00
Hardin County	93 56
Harrison County	61 46
Henry County	81 85
Highland County	92 95
Hocking County	73 19
Holmes County	58 53

Huron County	$ 96 99
Jackson County	102 74
Jefferson County	125 00
Knox County	83 30
Lake County	65 04
Lawrence County	118 60
Licking County	125 00
Logan County	91 26
Lorain County	125 00
Lucas County	125 00
Madison County	61 77
Mahoning County	125 00
Marion County	86 03
Medina County	65 87
Meigs County	85 86
Mercer County	84 06
Miami County	125 00
Monroe County	81 09
Montgomery County	125 00
Morgan County	53 71
Morrow County	53 64
Muskingum County	125 00
Noble County	58 40
Ottawa County	66 64
Paulding County	82 58
Perry County	95 52
Pickaway County	81 05
Pike County	54 52
Portage County	87 74
Preble County	71 14
Putnam County	97 57
Richland County	125 00
Ross County	122 82
Sandusky County	102 93
Scioto County	122 94
Seneca County	123 49
Shelby County	73 87
Stark County	125 00
Summit County	125 00
Trumbull County	125 00
Tuscarawas County	125 00
Union County	67 03
Van Wert County	91 18
Vinton County	45 99
Warren County	76 75
Washington County	125 00
Wayne County	113 61
Williams County	74 86
Wood County	125 00
Wyandot County	63 37
Total	**$8,373 81**

DISBURSEMENTS.

For per diem and expenses of lecturers, as follows:

Allen, F. L., Kinsman, forty-eight days	$392 45
Baldwin, S. J., Tallmadge, eighteen days	124 30
Begg, John, Columbus Grove, forty-eight days	374 05
Brigham, J. S., Bowling Green, twenty-eight days	232 02
Chamberlain, W. I., Hudson, thirty days	245 00
Cook, William M., Camden, sixteen days	234 30
Derthick, F. A., Mantua, forty-eight days	392 70
Dobie, J. Al., Gutman, forty-five days	363 15
Farnsworth, W. G., Waterville, forty-eight days	385 64
Goddard, L. H., Washington C. H., twenty-four days	192 05
Gordon, J. F., Jamestown, eighteen days	146 82
Housekeeper, G. C., Bowling Green, forty-eight days	380 20
Laylin, T. C., Norwalk, forty-six days	374 25
McIntire, Charles, Chandlersville, twenty-eight days	255 60
Montgomery, Cary W., Newark, forty days	353 10
Rathbun, Rei, Springfield. thirty-six days	299 85
Roudebush, Lowell, Nicholsville, forty-six days	364 80
Scott, George E., Mt Pleasant, forty-six days	389 80
Shawver, John L., Bellefontaine, forty-eight days	401 30
Snyder, E. P., Monroeville, forty-eight days	331 80
Spencer, L. G., Nutwood, thirty days	252 20
Strode, S. E., Westland, twenty-eight days	243 95
Thomas, M. C., Mingo, thirty-two days	262 05
Wagner, C. R., Arlington, thirty-six days	298 20
Wallace, R. H., Chillicothe, forty-eight days	389 71
White, A. L., Norwich, forty-two days	313 30
White, R. Y., Chandlersville, twelve days	105 85
Printing and postage and sundry expenses of the State Farmers' Institute	275 37
Total	$8,373 81

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING NOVEMBER 30, 1903, AND ENDING FEBRUARY 27, 1904.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expenses Reported by Societies.	Per Capita Allowance to Institute Societies Under the Institute Law.
		Where.	When.			
Adams	26,328	Cherryfork	December 4-5	300	$26 32	$78 98
		Wamsley	January 4-5	150	27 18	....
		Peebles	January 27-28	300	28 00	....
Allen	47,976	Spencerville	November 30—December 1	200	27 75	125 00
		Herring	January 27-28	250	31 25	....
		Beaverdam	February 12-13	400	31 25	....
		Delphos	February 24-25	400	50.00	....
Ashland	21,184	Nova	December 11-12	500	31 00	63 55
		Loudonville	January 8-9	200	30 00	....
Ashtabula	51,448	Andover	December 14-15	200	26 35	125 00
		Pierpont	February 1-2	300	31 25	....
		Geneva	February 3-4	330	34 50	....
		Orwell	February 8-9	350	31 25	....
Athens	38,730	Coolville	November 30—December 1	200	20 46	116 19
		Athens	December 18-19	200	29 00	....
		Albany	January 22-23	200	29 00	....
		Amesville	February 17-18	162	27 50	....
Auglaize	31,192	Uniopolis	December 7-8	200	31 80	93 58
		Buckland	January 6-7	250	34 20	....
		Cridersville	February 10-11	300	50 25	....
Belmont	60,875	Lloydsville	December 7-8	250	99 93	125 00
		Colerain	January 4-5	400	51 18	....
		Barnesville	January 20-21	150	67 53	....
		Morristown	February 8-9	150	34 10	....
Brown	28,237	Fayetteville	December 30-31	400	28 23	84 71
		Rusellville	January 6-7	200	28 00	....
		Mt. Orab	January 29-30	350	28 00	....
Butler	56,870	Ross	January 4-5	85	31 25	125 00
		Sevenmile	January 22-23	135	31 25	....
		Monroe	February 24-25	320	30 23	....
		Oxford	February 26-27	150	31 25	....

Carroll	16,811	Carrollton	January 8-9	700	34 60	50 43
		Magnolia	February 1-2	290	46 51	....
Champaign	26,642	Westville	December 21-22	300	40 75	79 93
		Mingo	January 29-30	400	39 96	....
Clark	58,938	Catawba	December 28-29	200	27 85	125 00
		Tremont City	January 27-28	225	28 75	....
		New Carlisle	February 1-2	300	33 05	....
		Pitchin	February 22-23	350	31 25	....
Clermont	31,610	Owensville	December 16-17	500	47 50	94 33
		Laurel	January 8-9	500	33 93	....
Clinton	24,202	Blanchester	January 20-21	450	46 80	73 61
		Wilmington	February 12-13	600	65 00	....
Columbiana	68,590	New Waterford	December 28-29	250	50 63	125 00
		Lisbon	January 29-30	300	49 66	....
		Damascus	February 17-18	400	33 75	....
Coshocton	29,337	Tiverton	December 23-24	225	34 08	88 01
		West Lafayette	February 24-25	300	18 43	....
Crawford	33,915	New Washington	December 11-12	700	33 91	101 74
		Galion	January 27-28	500	33 91	....
		Bucyrus	February 5-6	500	35 00	....
Cuyahoga	439,120	Warrensville	January 6-7	220	31 25	125 00
		Euclid	January 25-26	200	35 22	....
		Strongsville	February 8-9	400	31 25	....
		Olmstead Falls	February 15-16	340	31 25	....
Darke	42,532	Versailles	December 2-3	350	31 15	125 00
		New Madison	January 18-19	450	63 40	....
		Gettysburg	February 5-6	575	51 30	....
		Arcanum	February 19-20	750	31 35	....
Defiance	26,387	Hicksville	December 28-29	265	39 00	79 16
		Defiance	February 19-20	450	39 50	....
Delaware	26,401	Delaware	January 1-2	75	39 60	79 20
		Sunbury	February 10-11	360	43 25	....
Erie	37,650	Castalia	January 6-7	350	37 65	112 96
		Milan	February 3-4	250	37 55	....
		Berlin Heights	February 17-18	400	44 21	....
Fairfield	34,259	Pleasantville	December 16-17	300	58 33	102 78
		Amanda	December 23-24	200	25 69	....
		Carroll	January 22-23	500	42 87	....
		Bremen	February 19-20	400	51 05	....
Fayette	21,725	Goodhope	February 3-4	500	42 10	65 17
		Jeffersonville	February 10-11	750	32 58	....
Franklin	164,460	Groveport	December 18-19	300	48 58	125 00
		Hilliard	January 1-2	380	31 25	....
		Pleasant Corners	January 18-19	250	29 81	....
		Westerville	January 29-30	235	32 50	....
Fulton	22,801	Delta	January 20-21	300	29 00	68 40
		Wauseon	February 10-11	450	17 21	....
Gallia	27,918	Thurman	December 21-22	200	33 75	83 75
		Kyger	February 26-27	200	35 75	....
Geauga	14,744	Burton	February 12-13	300	35 60	44 23
Greene	31,613	Cedarville	December 28-29	550	32 98	94 84
		Jamestown	February 8-9	500	33 74	....
		Alpha	February 24-25	262	53 66	....

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING NOVEMBER 30, 1903, AND ENDING FEBRUARY 27, 1904—Continued.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expenses Reported by Societies.	Per Capita Allowance to Institute Societies Under the Institute Law.
		Where.	When.			
Guernsey	34,425	Cambridge	December 4-5	250	$25 25	$103 27
		Cumberland	January 22-23	300	21 05	....
		Quaker City	February 10-11	250	36 11	....
		Antrim	February 22-23	300	25 81	....
Hamilton	409,479	Newtown	December 18-19	200	31 25	125 00
		Mt. Healthy	January 6-7	750	31 25	....
		Blueash	January 22-23	350	31 25	....
		Harrison	February 22-23	300	31 25	....
Hancock	41,993	McComb	December 7-8	300	41 55	125 00
		Arcadia	January 6-7	400	33 33	....
		Mt. Blanchard	January 22-23	135	31 25	....
		Rawson	February 5-6	350	24 00	....
Hardin	31,187	Ada	January 8-9	115	46 78	93 56
		Forest	January 29-30	400	70 00	....
Harrison	20,486	Freeport	January 6-7	200	95 00	61 46
Henry	27,282	Malinta	December 30-31	350	43 33	81 85
		Deshler	February 15-16	260	42 53	....
Highland	30,982	Buford	December 14-15	500	30 98	92 95
		Leesburg	January 18-19	300	60 00	....
		Lynchburg	February 5-6	500	30 98	....
Hocking	24,398	Logan	December 18-19	500	36 59	73 19
		Laurelville	February 15-16	275	31 79	....
Holmes	19,511	Killbuck	January 6-7	350	29 26	58 53
		Holmesvile	January 18-19	400	32 99	....
Huron	32,330	Monroeville	January 4-5	75	20 60	96 99
		East Townsend	January 29-30	450	33 45	....
		North Fairfield	February 12-13	350	31 94	....
Jackson	34,248	Cove	November 30—December 1	200	20 20	102 74
		Jackson	December 23-24	200	34 24	....
		Camba	January 25-26	200	21 34	....

Jefferson	44,357	Smithfield	December 14-15	200	114 30	125 00
		Richmond	December 16-17	650	114 70	
		Mt. Pleasant	January 18-19	600	96 50	
Knox	27,768	Esto	February 12-13	400	41 65	83 30
		Democracy	February 24-25	350	34 00	
Lake	21,680	Willoughby	January 4-5	20	15 45	65 04
		Painesville	February 5-6	450	32 52	
Lawrence	39,534	Labelle	December 7-8	125	28 00	118 60
		Wilgus	January 4-5	250	35 00	
		Rockwood	January 6-7	100	11 55	
Licking	47,070	Brownsville	December 14-15	300	31 25	125 00
		Croton	December 21-22	400	31 25	
		Jersey	January 27-28	350	34 21	
		Alexandria	February 8-9	400	35 00	
Logan	30,420	Bellefontaine	December 11-12	250	40 00	91 26
		Rushsylvania	February 15-16	250	45 63	
Lorain	54,857	Copopa	December 9-10	350	39 93	125 00
		North Ridgeville	January 27-28	300	39 80	
		Rochester	February 10-11	375	41 66	
Lucas	153,559	Whitehouse	January 1-2	250	31 25	125 00
		Sylvania	January 18-19	200	31 25	
		Richfield Center	February 8-9	250	31 25	
		Monclova	February 17-18	150	31 25	
Madison	20,590	London	December 30-31	200	35 50	61 77
		West Jefferson	January 25-26	150	34 00	
Mahoning	70,134	*North Jackson	December 18-19			125 00
		Canfield	December 30-31	150	31 25	
		North Lima	January 27-28	350	31 25	
		Berlin Center	February 5-6	300	16 25	
Marion	28,678	Marion	February 3-4	80	43 01	86 08
		Caledonia	February 17-18	130	42 40	
Medina	21,958	Chatham	January 29-30	250	32 93	65 87
		Sharon Center	February 10-11	300	34 09	
Meigs	28,620	Chester	December 2-3	175	28 50	85 86
		Racine	December 14-15	350	28 00	
		Dyesville	December 16-17	200	14 71	
Mercer	28,021	Fort Recovery	February 8-9	325	24 95	84 06
		Neptune	February 22-23	300	12 40	
Miami	43,105	Piqua	December 23-24	130	44 71	125 00
		Bethel	January 1-2	150	31 25	
		Troy	February 3-4	350	57 84	
		West Milton	February 15-16	500	74 24	
Monroe	27,031	Beallsville	December 9-10	400	81 09	81 09
Montgomery	130,146	Vandalia	December 4-5	400	31 25	125 00
		Germantown	December 30-31	650	60 00	
		Brookville	February 17-18	480	67 84	
		Centerville	February 26-27	250	32 50	
Morgan	17,905	Malta	December 16-17	140	8 50	53 71
		Chesterhill	January 20-21	200	25 82	
Morrow	17,879	Shauck	December 23-24	300	27 59	53 64
		Chesterville	February 22-23	350	18 08	

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*Not held because of epidemic disease.

FARMERS' INSTITUTES HELD IN OHIO DURING THE SEASON BEGINNING NOVEMBER 30, 1903, AND ENDING FEBRUARY 27, 1904—Concluded.

Counties.	Population.	Institutes Held.		Attendance Reported.	Local Expenses Reported by Societies.	Per Capita Allowance to Institute Societies Under the Institute Law.
		Where.	When.			
Muskingum	53,185	Gaysport	December 2-3	200	$31 25	$125 00
		New Concord	December 14-15	300	59 00	....
		Roseville	December 18-19	80	40 85	....
		Rix Mills	February 12-13	250	26 30	....
Noble	19,466	Sharon	December 11-12	100	20 93	58 40
Ottawa	22,213	Elmore	February 1-2	125	33 32	66 64
		Port Clinton	February 5-6	250	33 32	....
Paulding	27,528	Haviland	January 18-19	250	31 10	82 58
		Oakwood	February 8-9	500	39 07	....
Perry	31,841	Unity	November 30—December 1	125	31 84	95 52
		Sayre	December 16-17	150	31 84	....
		Glenford	January 25-26	300	31 84	....
Pickaway	27,016	Ashville	January 20-21	400	37 65	81 05
		Tarlton	January 29-30	450	27 00	....
		Williamsport	February 17-18	800	76 64	....
Pike	18,172	Idaho	December 2-3	200	40 80	54 52
		Piketon	December 11-12	200	24 85	....
Portage	29,246	Garrettsville	January 8-9	500	31 60	87 74
		Randolph	January 25-26	236	28 95	....
Preble	23,713	Eldorado	December 28-29	550	36 45	71 14
		Camden	January 20-21	450	35 57	....
Putnam	32,525	Ottawa	January 20-21	100	63 97	97 57
		Leipsic	February 10-11	426	69 26	....
		Continental	February 24-25	850	55 66	....
Richland	44,289	Lucas	December 21-22	150	23 85	125 00
		Bellville	January 25-26	800	28 82	....
		Adario	January 29-30	450	45 95	....
		Butler	February 26-27	450	31 25	....
Ross	40,940	Kingston	December 21-22	75	33 30	122 82
		South Salem	December 28-29	250	24 21	....
		Bainbridge	February 1-2	90	51 44	....
		Frankfort	February 19-20	200	51 80	....

Sandusky	34,311	**Fremont**	January 8-9	800	43 70	102 98
		Clyde	January 18-19	500	45 13	
		Bellevue	February 19-20	600	38 96	
Scioto	40,981	**Haverhill**	December 9-10	250	52 70	122 94
		Scioto	January 8-9	161	33 90	
		Mt. Joy	January 25-26	145	12 68	
Seneca	41,163	**Bloomville**	January 8-9	400	30 87	123 49
		Tiffin	January 20-21	300	50 00	
		Greenspring	February 1-2	400	39 10	
		Fostoria	February 5-6	700	66 20	
Shelby	24,625	**Jackson Center**	December 9-10	225	36 93	73 37
		Sidney	January 4-5	160	36 75	
Stark	94,747	Alliance	February 3-4	220	33 30	125 00
		Canal Fulton	February 3-4	150	30 25	
		New Berlin	February 15-16	400	31 25	
		Marlboro	February 19-20	280	35 15	
Summit	71,715	West Richfield	December 7-8	200	41 25	125 00
		Nimisila	January 22-23	300	31 25	
		Ghent	January 27-28	200	51 80	
		North Springfield	February 12-13	275	31 25	
Trumbull	46,591	Fowler	December 16-17	300	31 25	125 00
		Churchill	January 1-2	175	27 50	
		Newton Falls	January 25-26	300	61 58	
		Mesopotamia	February 10-11	250	16 50	
Tuscarawas	53,751	Gnadenhutten	December 18-19	183	28 80	125 00
		Baltic	January 4-5	75	31 25	
		Strasburg	February 1-2	115	25 20	
		New Philadelphia	February 26-27	175	31 25	
Union	22,342	Marysville	December 30-31	250	32 27	67 08
		*Richwood	February 1-2			
Van Wert	30,394	Venedocia	January 25-26	200	26 55	91 18
		Convoy	February 1-2	400	30 39	
		Van Wert	February 26-27	425	25 50	
Vinton	15,330	New Plymouth	January 27-28	200	42 51	45 99
Warren	25,584	Waynesville	January 1-2	300	33 36	76 75
		Morrow	January 8-9	200	78 00	
Washington	48,245	Lowell	December 14-15	260	40 85	125 00
		Watertown	January 18-19	180	41 45	
		Bartlett	February 15-16	240	41 66	
Wayne	37,870	**Wooster**	January 20-21	200	37 87	113 61
		Creston	February 5-6	400	40 85	
		Lattasburg	February 8-9	240	36 99	
Williams	24,953	West Unity	January 22-23	390	22 60	74 86
		Montpelier	February 12-13	200	30 00	
Wood	51,555	Prairie Depot	January 4-5	150	31 25	125 00
		Bloomdale	January 22-23	300	31 25	
		Tontogany	February 3-4	230	21 40	
		Bowling Green	February 12-13	125	31 25	
Wyandot	21,125	Carey	December 9-10	400	31 60	63 37
		Upper Sandusky	February 19-20	1,000	38 00	
	4,157,545			75,810	$9,206 74	$8,373 81

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*Not held because of epidemic disease.

INDEPENDENT INSTITUTES.

Counties.	Institutes Held.		Attendance Reported.	Local Expenses Reported by Societies.
	Where.	When.		
Brown	Feesburg	March 3-4	452	$26 66
Clark	Clifton	January 7-8	300	40 00
	Springfield	January 23	350	19 90
Clermont	Amelia	February 17-18	400	52 98
Clinton	New Vienna	February 16-17	400	70 00
Fairfield	Basil	March 2	300	30 52
Geauga	Thompson	December 18	300	22 00
Hancock	Benton Ridge	January 27-28	300	20 01
Harrison	Cadiz	February 12-13	270	140 00
Henry	Sharon	January 15-16	450	51 28
Huron	Wakeman	January 6-7	200	25 00
Knox	Fredericktown	February 5-6	275	33 04
Lake	Perry	January 4-5	100	18 50
Medina	Malletcreek	December 11-12	300	30 00
	Brunswick	January 15-16	300	50 00
	Poe	January 21-22	150	60 86
	Hinckley	February 26-27	200	45 00
Meigs	Rutland	January 27-28	200	23 00
Mercer	Coldwater	January 20-21	150	31 70
	Wabash	February 3-4	350	41 99
Morrow	Cardington	February 9-10	400	43 60
Muskingum	Chandlersville	November 24-25	300	97 33
Noble	Summerfield	February 24-25	250	46 20
Paulding	Payne	February 5-6	300	37 75
Perry	Rehoboth	December 21-22	300	27 79
Preble	New Paris	January 14-15	500	85 00
Summit	Osborn Corners	December 29-30	160	32 25
Tuscarawas	Sugarcreek	February 8-9	450	24 00
Williams	Bryan	February 5-6	325	17 85
Wyandot	Nevada	January 22-23	500	58 65
			9,232	$1,302 36

RECAPITULATION.

1.	Amount collected by the State Board of Agriculture from the three mills per capita tax. from the eighty-eight (88) counties of the state, in all of which institutes were held	$ 8,373 81
2.	Amount available for paying local expenses of two hundred and forty-seven (247) institute societies, from the three mills per capita tax, from the eighty-eight (88) counties of the state, in all of which institutes were held	8,373 81
3.	Amount expended by the State Board of Agriculture in aid of two hundred and forty-seven (247) county institutes for lecture work	8,098 44
4.	Amount expended by county societies for expenses of two hundred and forty-five (245) institutes held	9,206 74
5.	Total expenses of regular institutes	17,305 18
6.	Average expenditure, per institute, by the State Board of Agriculture for lecturers	32 78
7.	Average expenditure, per institute, by societies	37 57
8.	Total average expense per institute	70 35
9.	Total average number of persons in attendance at two hundred and forty-five (245) institutes held	75,810
10.	Average number of persons in attendance at each	309
11.	Number of independent institutes reported	30
12.	Expenses of thirty (30) independent institutes	1,302 36
13.	Average expense of thirty (30) independent institutes reported	43 41
14.	Total average number of persons in attendance at thirty (30) independent institutes	9,232
15.	Average attendance at each of thirty (30) independent institutes	307

(NOTE—The State Board of Agriculture authorized the holding of two hundred and forty-seven (247) farmers' institutes and employed lecturers to address them, and, as a business proposition, paid the per diem and expenses of the lecturers for the two institutes not held the same as though held.)

LECTURERS

Employed by

THE OHIO STATE BOARD OF AGRICULTURE

FOR THE INSTITUTE SEASON OF 1903-1904, WITH POST-OFFICE ADDRESSES AND TOPICS.

F. L. Allen, Kinsman, Trumbull County, O.

1. A Study of Soils and the Problem of Fertility:
    - (a) The Origin, Composition, Kinds and Functions of Soils. Thirty minutes.
    - (b) Soil Water—Drainage. Thirty minutes.
    - (c) Conservation of Moisture. Thirty minutes.
    - (d) Humus—Soil Bacteria and Tillage. Thirty minutes.
    - (e) Manures and Fertilizers.
2. Maple Creek Farm. Twenty minutes.
3. Silos and Silage. Twenty-five minutes.
4. The Home Mixing of Fertilizers. Twenty-five minutes.
5. Machinery on the Farm. Twenty-five minutes.
6. In the Dairy. Twenty-five minutes.
7. Ohio Forests. Twenty-five minutes.
8. Some Profitable Investments. Forty minutes. Night.
9. The American Farmer. Forty minutes. Night.

S. J. Baldwin, R. R. 19, Tallmadge, Summit Co., O.

1. The Farmer as a Business Man. Twenty minutes.
2. Silos and Silage. Thirty minutes.
3. Feeds and Feeding. Thirty minutes.
4. Care of the Winter Dairy. Thirty minutes.
5. The Corn Crop. Thirty minutes.
6. The Chemistry and Philosophy of Maple Sugar Making. Forty minutes.
7. Some of Our Insect Friends. Fifty minutes.
8. The Origin of Storms—Their Course and Influence on the Weather. Fifty minutes. Night.
9. When the Earth Met a Comet, or the Origin and Effect of the Glacial Epoch. Sixty minutes. Night.
10. The Evolution of the Farmer. Fifty minutes. Night.

John Begg, R. R. 1, Columbus Grove, Putnam Co., O.

1. Corn Culture. Twenty-five minutes.
2. Care and Treatment of Our Soils. Twenty minutes.
3. Factors in Successful Wheat Raising. Twenty-five minutes.
4. Practical Points in Successful Swine Husbandry. Twenty-five minutes.
5. The Calf, Its Value and Care. Twenty minutes.
6. The Cattle Business—What About It? Thirty minutes.
7. Good Roads. Forty minutes.
8. The Value of Clover. Twenty minutes.
9. Improved Methods and Machinery on the Farm. Twenty-five minutes.
10. The Experiment Station and the Farmer. Twenty minutes.
11. Farm Organizations—Do They Pay? Thirty-five minutes. Night.
12. Landlord and Tenant and Their True Relation to Each Other. Forty minutes. Night.
13. Sunshine and Shadow in Farm Life. Fifty minutes. Night.

J. S. Brigham, Bowling Green, Wood Co., O.

1. Vegetables Under Glass. Twenty-five minutes.
2. Skill in Preparing and Marketing Produce. Twenty minutes.
3. Vegetables on the Farm. Twenty minutes.
4. The Melon Crop. Twenty minutes.
5. Some Points in Using Manure and Fertilizer. Twenty-five minutes.
6. Celery Culture. Twenty-five minutes.
7. Some Profitable Crops. Twenty minutes.
8. Soil Building and Cultivation. Twenty-five minutes.
9. The Potato Crop. Twenty minutes.
10. Reading—Its Influence in the Farm Home. Thirty minutes. Night.
11. What Can Organization do for the Farmer? Thirty minutes. Night.
12. Life on a Texas Cattle Ranch. Forty minutes. Night.

W. I. Chamberlain, Hudson, Summit Co., O.

1. Shall We Plow Our Clay Farms? Twenty minutes.
2. Shall We Tile Clay Land? (Illustrated.) Twenty minutes.
3. Clover, Cowpeas, etc., in Rotation. Twenty minutes.
4. Money in Apples—
   (a) Growing the Orchard. Fifteen minutes.
   (b) Handling the Fruit. (Illustrated.) Fifteen minutes.
5. Money in Potatoes and Wheat. Twenty minutes.
6. A Model Grain and Stock Farm. (Illustrated.) Thirty minutes.
7. The Winter Care of Live Stock. (Illustrated.) Thirty minutes.
8. The Debt We Owe Our Children. (Evening popular lecture.) Fifty minutes.
9. Three Partners on Each Farm. Forty-five minutes. Night.
10. Roads, Schools and Rural Mail Delivery. Forty-five minutes. Night.

William M. Cook, R. R. 3, Camden, Preble Co., O.

1. The Practical Use of Commercial Fertilizer. Twenty-five minutes.
2. Economical Hog Raising. Twenty-five minutes.
3. The Possibilities of Scientific Agriculture. Twenty-five minutes.
4. Sorghum; Care and Value as a Winter Feed. Twenty-five minutes.
5. Modern Improvements in Farm Life. Twenty-five minutes.

6. Short Cuts in Farming. Twenty-five minutes.
7. Observations in Stock Feeding. Twenty-five minutes.
8. Crop Rotation. Twenty-five minutes.
9. Soil Improvement. Twenty-five minutes.
10. Making Ends Meet. Thirty minutes. Night.

F. A. Derthick, R. R. 2, Mantua, Portage Co., O.

1. Practical Management of the Dairy. Thirty minutes.
2. The Apple Orchard. Thirty minutes.
3. Potatoes as a Side Line. Thirty minutes.
4. Farm Conveniences. Thirty minutes.
5. The Ohio State Board of Agriculture—its Work. Thirty minutes.
6. The Ohio Agricultural Experiment Station—Its Work. Thirty minutes.
7. The Horse and How to Train Him. Forty-five minutes.
8. Organization. Forty-five minutes.
9. Compensations of Farm Life. Fifty minutes. Night.
10. A Trip to New England via Niagara. Thirty minutes. Night.
11. Centralization of Schools. Thirty minutes. Night.

J. Al. Doble, Gutman, Auglaize Co., O.

1. Some Points in Swine Husbandry. Thirty minutes.
2. Getting a Stand of Clover. Twenty minutes.
3. Management of Tough Clay Soils. Thirty-five minutes.
4. Plowing and Plows. Twenty minutes.
5. Cultivating and Cultivators. Twenty minutes.
6. Some Essentials in Wheat Growing. Thirty minutes.
7. How to Make the Small Farm Pay. Thirty-five minutes.
8. Care and Education of the Colt. Thirty-five minutes.
9. The Pathway to Success. Forty minutes. Night.
10. Character as Affected by Country Life. Forty-five minutes. Night.

W. G. Farnsworth, Waterville, Lucas Co., O.

1. Culture and Care of the Corn Crop. Twenty-five minutes.
2. How and When to Spray. Fifteen minutes.
3. Marketing Our Produce. Twenty minutes.
4. The Farmer's Team. Twenty minutes.
5. Mutual Fire Insurance for Farmers. Twenty-five minutes.
6. The Culture of Fruit by the Farmer. Twenty-five minutes.
7. How We Grow and Handle Potatoes. Twenty-five minutes.
8. Growing Small Fruit Commercially. Twenty-five minutes.
9. Pruning Small Fruits and Orchards. Fifteen minutes.
10. How We Maintain and Increase Soil Fertility. Twenty-five minutes.
11. The Question of Help on the Farm. Twenty minutes.
12. The Work of Our Experiment Station. Twenty-five minutes.
13. Partnership on the Farm. Twenty-five minutes. Night.

L. H. Goddard, Washington C. H., Fayette Co., O.

1. The Agricultural Student Union and What It Is Doing for the Farmers of Ohio. Thirty minutes.
2. The Perfect Ear of Corn. Twenty-five minutes.

3. Corn Breeding as Carried on by a Farmer. Thirty minutes.
4. Hydraulic Cement and Its Use on the Farm. Twenty minutes.
5. Exact Figures on Building and Filling a 600-ton Silo. Twenty-five minutes.
6. Cattle Feeding Experience—The So-called "Corn Belt Method." Thirty minutes.
7. An Acre of Pasture—What Is It Worth? Twenty minutes.
8. A Farmer's Figures on Feeding Rations. Twenty-five minutes.
9. Soy Beans—Growing and Feeding Them. Twenty minutes.
10. Soil Inoculation for the Legumes. Twenty-five minutes.
11. The Wife's Poultry Methods. Twenty minutes.
12. Farm Labor, Indoors and Outdoors. Twenty-five minutes.
13. Farming—Is It a Trade or Profession? Thirty minutes.
14. Agriculture at the State University. (Illustrated.) Forty-five minutes. Night.

J. F. Gordon, Jamestown, Greene Co., O.

1. The Farmer's Orchard. Thirty minutes.
2. Care of Farm Implements. Twenty-five minutes.
3. The Colt—Its Care and Training. Thirty minutes.
4. Hired Help on the Farm. Thirty minutes.
5. The Farmer's Cow. Twenty-five minutes.
6. Waste Land on the Farm. Twenty-five minutes.
7. Corn—Our King Crop. Thirty minutes.
8. Stepping Stones to Success. Thirty minutes.
9. Home Environments. Thirty minutes. Night.

G. C. Houskeeper, Bowling Green, Wood Co., O.

1. Some Valuable Helps. (Illustrated.) Twenty-five minutes.
2. Air, Rain, Frost, etc. (Illustrated.) Twenty minutes.
3. Why Rotate Crops? Twenty minutes.
4. Growing and Disposing of the Corn Crop. Twenty minutes.
5. Growing and Marketing Potatoes. Twenty minutes.
6. Fruits for Home Use. Twenty minutes.
7. Growing and Marketing Hogs. Twenty minutes.
8. What About Wheat? Fifteen minutes.
9. The Farmer and the Public School. (Illustrated.) Twenty-five minutes.
10. Advantages of Farming. Twenty minutes.
11. Reading for the Farmer and Family. Fifteen minutes.
12. In the Home. Twenty-five minutes. Night.
13. Some Thoughts for Young Men. Twenty-five minutes. Night.

T. C. Laylin, R. R. 1, Norwalk, Huron Co., O.

1. Fifteen Minutes in the Oat Field. Fifteen minutes.
2. Fields and Fences. Twenty minutes.
3. Theory and Practice in Corn Culture. Twenty minutes.
4. The Culture of Late Potatoes. Twenty minutes.
5. Improving the Physical Condition of the Soil. Twenty minutes.
6. Keeping Up the Fertility of the Farm. Twenty minutes.
7. What Does It Cost? or Profit and Loss. Thirty minutes.
8. The Value of Science to the Farmer. Thirty minutes.
9. Genius in Farming. Forty minutes. Night.

10. The Evolution of American Agriculture. Forty-five minutes. Night.
11. "Our Boys." Forty minutes. Night.

Charles McIntire, Chandlersville, Muskingum Co., O.

1. The Feeding of Animals. Twenty minutes.
2. How Can the Farmer Analyze His Own Soil? Twenty minutes.
3. When to Cut the Grass. Fifteen minutes.
4. Beef Production. Twenty-five minutes.
5. Swine Feeding for Profit. Twenty minutes.
6. Increasing the Effectiveness of Barnyard Manure. Fifteen minutes.
7. The Ohio Agricultural Experiment Station, and How It Can Benefit the Farmer. Twenty-five minutes.
8. Horses. Twenty minutes.
9. Soy Beans, Cowpeas, Rape, Alfalfa and Clover. Twenty minutes.
10. The Natural Improvement of Soils. Twenty minutes.
11. Farmers of the Future. Twenty minutes. Night.

Cary W. Montgomery, Box 4, Newark, Licking Co., O.

1. Clover. Twenty minutes.
2. Planting and Growing Fruit Trees. Twenty minutes.
3. How Plants Feed and Grow. Twenty minutes.
4. Soil Conditions Essential to Crop Production. Twenty minutes.
5. The Farmer's Fruit Garden. Twenty minutes.
6. Marketing Produce. Twenty minutes.
7. Potatoes. Fifteen minutes.
8. Melons. Fifteen minutes.
9. Leaks on the Farm. Twenty minutes.
10. Rural Amusements. Twenty-five minutes. Night.
11. What Do We Owe to Our Community? Twenty-five minutes. Night.

Rel Rathbun, Box 102, Springfield, Clark Co., O.

1. Poultry on the Farm. Twenty minutes.
2. The Farmer's Truck Patch. Twenty minutes.
3. The Farmer's Cows—Feed and Milk. Twenty-five minutes.
4. Mixed vs. Special Farming. Twenty minutes.
5. Improvement of Country Schools. Twenty minutes.
6. Some Educational Helps to Farmers. Twenty-five minutes.
7. Handling and Using Manure. Twenty minutes.
8. Use of Commercial Fertilizers. Twenty-five minutes.
9. Some "Snags" in Farming. Twenty minutes.
10. Underdraining and Cultivation. Twenty-five minutes.
11. Feeding the Family. Twenty-five minutes.
12. Home and Home-making. Thirty minutes. Night.
13. The Objective Point in Life. Thirty minutes. Night.
14. The Wife's Part—Place and Pay. Thirty minutes. Night.
15. The Up-to-date Farmer. Thirty minutes. Night.

Lowell Roudebush, Nicholsville, Clermont Co., O.

1. Some Common Mistakes in Raising Poultry. Twenty minutes.
2. The Farmer's Garden. Fifteen minutes.

3. Care and Management of Small Fruits. Twenty minutes.
4. The Outlook for Orcharding in Ohio. Fifteen minutes.
5. The Essentials in Spraying. Fifteen minutes.
6. Peach Yellows. Fifteen minutes.
7. The Canker Worm. Fifteen minutes.
8. The San Jose Scale. Fifteen minutes.
9. The Rose Chafer and Fruit-tree Bark Beetle. Fifteen minutes.
10. The Hessian Fly. Fifteen minutes.
11. Natural Enemies of Insect Pests. Twenty minutes.
12. Why Farmers Should Raise Sheep. Twenty minutes.
13. Is It Profitable to Raise Horses? If so, What Class? Twenty minutes.
14. Feeding Stock for Profit. Twenty minutes.
15. How to Utilize Cowpeas and Soy Beans. Twenty minutes.
16. Alfalfa. Fifteen minutes.
17. What the U. S. Department of Agriculture Is Doing for the Farmer. Twenty-five minutes.
18. Noxious Weeds and How to Destroy Them. Twenty minutes.
19. Uncle Sam's Land of the Midnight Sun. Forty-five minutes. Night.
20. The Clouds—In and Above Them. Thirty minutes. Night.

Geo. F. Scott, Mt. Pleasant, Jefferson Co., O.

1. Clover and Other Sources of Fertility. Twenty-five minutes.
2. Use and Abuse of Commercial Fertilizers. Twenty-five minutes.
3. Silo Building and Silage. Twenty-five minutes.
4. Dairy Work at Maple Valley Farm. Twenty-five minutes.
5. The Wife's Poultry Yard. (Illustrated.) Twenty-five minutes.
6. What, When and How to Eat. (Illustrated.) Twenty-five minutes.
7. Corn Breeding. (Illustrated.) Twenty-five minutes.
8. Advantages of Well-Bred Livestock. Twenty-five minutes.
9. Advantages of Farm Orchards. Twenty-five minutes.
10. The Farmer and the Telephone. Twenty-five minutes.
11. Farm Labor Problem: Shall I Rent or Hire? Twenty-five minutes.
12. Who Shall Follow in Our Footsteps? Forty minutes. Night.
13. Advantages of the Farm as a Home. Forty minutes. Night.

John L. Shawver, Bellefontaine, Logan Co., O.

1. The Farm Dairy. Forty minutes.
2. Feeds and Feeding. (Illustrated.) Thirty minutes.
3. The Farmer's Fruit Supply. Twenty minutes.
4. Farm Buildings. (Illustrated.) Thirty minutes.
5. The Farmer's Table. (Illustrated.) Thirty minutes.
6. Household Aids and Conveniences. Twenty minutes.
7. The Problem of Farm Help. Thirty minutes.
8. The Economy of Co-operation. Thirty minutes.
9. Clovers and Their Values. (Illustrated.) Thirty minutes.
10. Making, Saving and Applying Manures. (Illustrated.) Thirty minutes.
11. The Farmer as a Business Man. Thirty minutes.
12. Why Go to the City, Young Man? Thirty minutes.
13. The Education of Our Boys and Girls. Thirty minutes.
14. Seedtime and Harvest. (A talk to young people.) Fifty minutes. Night.

E. P. Snyder, R. R. 11, Monroeville, Huron Co., O.

1. Shall We Keep Sheep? Twenty minutes.
2. Wheat Growing and Marketing. Fifteen minutes.
3. A Farmer's Way With Strawberries. Twenty minutes.
4. Small Fruits for the Farmer. Twenty minutes.
5. Mutual Fire Insurance for Farmers. Fifteen minutes.
6. Our Common Schools. Twenty minutes.
7. Seeding to Timothy and Clover. Fifteen minutes.
8. A Few of the Possibilities of Farming. Twenty minutes.
9. Lights and Shadows of Soldier Life. Forty-five minutes. Night.
10. Notes of Travel in Our Native Land. Forty-five minutes. Night.

L. G. Spencer, Nutwood, Trumbull Co., O.

1. Butter Making for a Local Market. Thirty minutes.
2. The Dairy Cow and How We Treat Her. Thirty minutes.
3. Small Fruit for the Small Farm. Thirty-five minutes.
4. Hogs for Profit. Thirty minutes.
5. The Farmer's Friends. Thirty minutes.
6. Noxious Weeds and Their Destruction. Twenty minutes.
7. Potato Culture. Thirty minutes.
8. The Silo—Its History, Construction and Value. (Illustrated.) Thirty minutes.
9. One of the Essentials in Farming. Thirty minutes.
10. What Shall the Harvest Be? Thirty minutes. Night.
11. The Farm Home as a Factor in Our Nation's Progress. Forty minutes. Night.

S. E. Strode, Westland, Morgan Co., O.

1. The Apple Orchard, Planting and Growing. Twenty minutes.
2. Making an Old Apple Orchard Profitable. Fifteen minutes.
3. Points in Wheat Culture. Thirty minutes.
4. Clover on Ohio Farms. Thirty minutes.
5. Sheep. Thirty minutes.
6. Plant Food From Manures, Legumes and Commercial Fertilizers. Thirty to forty minutes.
7. Problems in Hillside Farming. Thirty minutes.
8. Some Mistakes We Farmers Make. Thirty minutes. Night.
9. Shall He Choose Agriculture? Thirty to forty-five minutes. Night.

M. C. Thomas, Mingo, Champaign Co., O.

1. Cement Floors. Twenty minutes.
2. Commercial Fertilizers. Twenty minutes.
3. Corn Growing. Twenty-five minutes.
4. Swine Management for Profit. Twenty minutes.
5. The Old and the New in Maple Syrup Making. Fifteen minutes.
6. The Business Side of Farming. Twenty minutes.
7. The Value and Management of a Clover Seed Crop. Twenty minutes.
8. The Problem of Soil Fertility. Twenty-five minutes.
9. A Balanced Ration for the Farm Boy. Thirty minutes. Night.
10. An Enlightened Husbandry. Thirty-five minutes. Night.

C. R. Wagner, R. R. 15, Arlington, Hancock Co., O.

1. Live Stock Essential to the Highest Type of Agriculture. Thirty minutes.
2. The Foundation Principles of Live Stock Breeding. Thirty minutes.
3. The Three Essentials in Successful Live Stock Breeding. Thirty minutes.
4. Sheep Husbandry—Its Sunshine and Shadow. Thirty minutes.
5. The Agricultural Fair. Thirty minutes.
6. Mutual Insurance for the Farmer. Thirty minutes.
7. Our State Experiment Station. (Illustrated.) Thirty minutes.
8. The Boy and the Farm. Thirty minutes.
9. Problems That Confront the Rural School. Thirty minutes.
10. The Home—Its Influences and Surroundings. Forty minutes. Night.
11. The Power of Concentrated Thought and Action. Forty minutes. Night.

R. H. Wallace, Chillicothe, Ross Co., O.

1. Feeding for Profit. Thirty minutes.
2. Skill in Farming. Twenty-five minutes.
3. Heredity in Animal Life. Thirty minutes.
4. The Farm Dairy. Twenty-five minutes.
5. The State Board of Agriculture and Farmers' Institutes. Twenty-five minutes.
6. Will the Future King of the Farm Be Cotton, Corn or Wheat? Twenty-five minutes.
7. How to Treat Worn Out Soils. Twenty-five minutes.
8. The Relation of the Farm to the Factory and the Commercial World. Thirty-five minutes.
9. What Shall Be Done With the Surplus of the Farm? Thirty-five minutes. Night.
10. Prehistoric Races of This Country. Forty minutes. Night.
11. The Sowing aud the Reaping. Forty minutes. Night.
12. What Constitutes the Farmer's Education? Forty minutes. Night.

A. L. White, Norwich, Muskingum Co., O.

1. Skilled Labor on the Farm. Fifteen minutes.
2. Perfect Corn Culture. Twenty minutes.
3. Growing and Marketing Peaches. Twenty minutes.
4. How Birds Affect the Farm and Garden. Twenty minutes.
5. Swine Raising. Fifteen minutes.
6. The Hen and Her Family. Twenty minutes.
7. Field Management. Fifteen minutes.
8. Growing and Marketing Wool. Twenty minutes.
9. Can a Young Renter Hope to Own a Farm? Thirty minutes.
10. Practical Barn Building. Fifteen minutes.
11. Soil Management. Fifteen minutes.
12. Confidence in Our Work. Thirty minutes.
13. Marketing Farm Products. Fifteen minutes.
14. Our Good Women. Twenty minutes.
15. The Colt; Its Care and Management. Fifteen minutes.
16. The Elements of a Forceful Life. Thirty-five minutes. Night.
17. Children of the Farm. Forty minutes. Night.

R. Y. White, Chandlersville, Muskingum Co., O.

1. How to Select Live Stock. Twenty minutes.
2. The Farmer's Orchard. Twenty-five minutes.
3. Sheep on the Farm. Twenty minutes.
4. The Hessian Fly. Fifteen minutes.
5. The Chicken for Profit. Twenty-five minutes.
6. Plant Feeding. Twenty minutes.
7. Soya Beans, Cowpeas, Catch Crops. Twenty minutes.
8. Maintaining and Restoring Fertility to Soil. Twenty minutes.
9. Care of Grass Lands. Twenty minutes.
10. Life on the Farm. Thirty minutes. Night.
11. Starting in Life. Thirty minutes. Night.

PAPERS READ
AT
FARMERS' INSTITUTES, 1903-1904.

Forwarded to the Secretary of Agriculture for Publication in the Annual Institute Report.

FARMERS NEED KNOWLEDGE.

BY C. B PALMER, WARRENSVILLE, OHIO.

[Read at the Farmers' Institute Held at Warrensville, Cuyahoga County, January 6-7, 1904.]

Among the occupations of men that of the farmer holds a unique position. No other calling overlaps so many others. The farmer is both a laborer and capitalist, a manufacturer and merchant; he needs to be almost a scientist to the extent of his farm knowledge, and he must be a business man if he succeeds.

No need is more apparent, and I think none is greater among farmers, than the observance of better business methods. As a producer of commodities the farmer should be guided by the same business principles applying to manufacturers; in the disposal of these products the talents of the merchants are needed; in the conduct of all his farming operations good business sense is essential. Go into any farming community and who are the successful men? Are they the men with the best education, the largest farms, those who have inherited the most property? These are helps, but above and beyond all these stands the man who is not only a good farmer, but a thorough business man as well.

It is possible within the limits of this article to mention only a few of the many particulars in which farmers need to follow better business practices. A very common fault is the failure to keep farm accounts. It is not necessary for the average farmer to have an elaborate system of bookkeeping; indeed, the simpler it is the better; but it is certainly poor business policy to go on from year to year without definite knowledge of what one is doing. Not only is this true of the farm business as a whole, but it applies with equal force to its several branches. Here is a farmer who keeps a herd of cows. He "thinks" that some of his cows are superior to the rest; he does not know, because he has never weighed and tested the milk from the different members of his herd. It would be good business to keep a record of the produce of each cow, and save the heifers from the best cows only. How many farmers are there who can tell the farm cost of beef, pork, or mutton which they sell? Doubtless if an account were kept of the feed consumed many farmers would change their methods of feeding.

A large proportion of farmers fail to exercise good judgment in the sale of produce. Many, probably a majority, do not ship their products, but sell to men who make a business of buying and shipping farm produce. These buyers are good men to have in a community, and it is perfectly right for them to realize a fair profit on the material they handle; frequently, however, some of them take advantage of the farmer who is not well informed on prices; a trifling sum invested in a daily newspaper would guard against such losses. The merchant and the manufacturer find that it pays them to advertise, but how few farmers ever advertise their products. Many times, however, it pays, and pays well; a few lines in a local paper or a good agricultural paper ofttimes secures a purchaser for what was otherwise unsalable. Another common fault in selling produce is the failure to carefully grade the material offered. Little potatoes, cull apples, scrawny fowls, are mingled with better specimens of their kind in the vain hope that they will add to the quantity and not detract from the price. What would the men who do this think of the merchant or manufacturer who would thus mix his wares when placing them on the market? Good business policy requires that farm produce, when offered for sale, be carefully graded like other merchandise.

A cardinal rule in business is that needless waste must not be permitted. This rule is often transgressed on the farm. Many things which might be used or sold, and thus added to the farmer's income, are allowed to go to waste. Again, there is a vast amount of waste land on our farms—not necessarily, but carelessly so. Outside of the home grounds and woodland there should not be a foot of land on which taxes are paid, except what is unavoidable along ditches, fences, roads, etc., that does not produce a fair profit on the money it represents. Labor is ofttimes wasted on the farm. I have in mind a neighbor, a hard-working man, who spends the greater portion of his time doing chores; not that he has more stock or that he cares for it better than his brother farmers, but simply because of the awkward, unhandy manner in which he has arranged his farm buildings, yards, etc. He is continually behindhand in his farm work, and, needless to say, he is not prosperous.

Still another particular in which good judgment is required is in the purchase and care of farm implements. Labor-saving tools are a necessity, and the farmer who wishes to keep up with the times must have them. It does not pay to put in crops poorly, or to care for them in a half-way manner because of a lack of suitable tools. Nevertheless one should be prudent in the matter of buying expensive machinery. The test question should be, Will the tool pay back its cost and good interest thereon during the time we may expect it to last? If not, then do not buy it. Farm implements represent a considerable part of the capital of every farmer. It is poor business to allow any impairment of one's capital, and yet how great is the loss borne by farmers because of the injury to and destruction of farm implements by exposure to the weather. Go through the country almost anywhere and you will seee plows, wagons, mowers, tools of every description, housed in fence corners or left where the owner last used them. It would be money well spent to build a tool-house or shed and use it after it is built.

It has been said that the farmer's bank is the fertility of his soil. It is more than this: it is the very foundation of his success, if he achieves any. It ought not to require argument to show the vital importance of maintaining and increasing the fertility of our soils. Sad to tell, however, in this very particular poor business management is most clearly apparent on many farms. How often do we see the manure from the stables thrown out under the eaves of the barn, there to lose by leaching or firefang a large portion of its fertilizing power. Frequently, also, while this waste goes on at the barn, in the fields crop follows crop without rest or rotation, until it is little wonder we hear so much of soil exhaustion. Contrast these methods with those of the business-like farmer, who carefully saves and applies all the manure produced on the farm, supplementing it, when he can do so profitably, with commercial fertilizers. This man knows that there are vast stores of plant food locked up in his soil, and he finds in careful tillage and drainage the keys which unlock this hidden fertility.

Professor Roberts is quoted as saying that the average New York acre of land contains within one foot of the surface about four thousand five hundred and seventy-nine pounds of nitrogen, six thousand three hundred and twenty-eight pounds of phosphoric acid, and twenty-four thousand pounds of potash. Valued at the farm cost in commercial fertilizers, these figures represent over two thousand dollars worth of these elements per acre. More than this, above every farm there is a never-failing supply of the most expensive element in our fertilizers—nitrogen. The business farmer knows that by growing clover or some other of the legumes he can feed his soil with this nitrogen from the air, and thereby save buying it in his fertilizer.

The successful merchant or manufacturer is in touch with the spirit of progress in his occupation; he is up with the times. Good business demands of the farmer that he keep himself fully informed of the advance made in his vocation. With the multitude of good agricultural papers and books, the bulletins and reports issued by the National Department of Agriculture and by the various State Experimental Stations, there is no excuse for ignorance. Into many farmhouses, however, these helps never enter; the only papers received are cheap, trashy story papers. If you go to the farmers living in these homes and ask them to subscribe for a good farm paper you will be told that they cannot afford to do so. Usually the condition of the farms proves that they can ill afford to do without it.

Not alone in farm matters are better business methods needed. In his relations to his fellow men, and as a distinct element in our national life, the farmer needs the broader view of the business man. As long as a majority of farmers remain carelessly indifferent, so long will we fail to secure legislation to protect our products from unfair imitation. The burdens of taxation fall heavily on the farmer, for his is tangible property, and thus they will continue to fall until he acts, instead of merely grumbling. Do we fear the trusts and great corporations? Let us rather take a lesson from them and know that were the farmers alive to their interests and their power, and only half as strongly organized as many other industries, they could secure all the legislation they need and are of right entitled to.

Does the farmer desire more of the conveniences and comforts of modern life? Is he tired of the "isolation" of the farm? Business methods call for good roads. Trolley cars, telephones, and rural mail delivery go first to the enterprising communities where good roads and business-like farmers abound. Are the boys and girls coming to believe that the farm life is naught but toil and drudgery? Better business practices will go far toward making the farm home brighter, ease its labors, and thereby keep the boys and girls contented.

We hear much of late of the triumphs of American manufacturers in the world's markets, but for these many years the American farmer has been distancing all competition. Will he continue to do so in the future? His hope lies in the adoption of the most improved methods, in economy of labor, in cheap transportation, in favorable laws. In a word, the continued prestige of the American farmer depends on his observances of the best business methods.

COMMERCIAL FARMING.

BY N. O. FROST, WEST MENTOR, OHIO.

[Read at the Farmers' Institute Held at Willoughby, Lake County, January 4-5, 1904.]

In these days good, practical commercial farming is necessary to successful farming. Having stated my proposition, let me now offer the proof. Commercial means "relating to or engaged in commerce or trade." Farming is "the tilling or cultivating of land." The farmer who pays strict attention to and engages his whole time in the tillage of land, the raising of crops, the care of farm animals, informing himself as best he can along these lines, may be a good farmer and yet not a successful one. He should be familiar with the markets, at least, of the states, better still, of the world, in connection with the things he so intelligently produces.

The average American farmer possesses the advantage of occupancy and ownership as well of sufficient land to employ the energies and ability of an active and enterprising mind. The young man who contemplates the business of farming should see that he starts out with the business side of his nature well equipped as well as the scientific side.

You doubtless have heard farmers many times speak in a joking and insinuating way of the farm methods of our "city farmers" so called, but let me warn you, my friend, that some of these, with not more than ten years of practical farm experience, but with many more years of practical business experience are taking the lead in realizing net profits. It is easier and less expensive to hire experienced labor than commercial experience, and thus they have the advantage. Many also have immense advantage in not having all their capital invested in land. They not only have the business sagacity of knowing the probable trend of the markets or the demands of popular taste, but have the capital to carry out their plans. Commercial farming may lead one to know and not guess what the profit or loss is on the things he produces. It may lead him to discard some unprofitable rotations. It may lead him to undertake something more congenial to him and more especially adapted to the farm. He may be able to come in easy contact with purely business men, because his business methods are similar to theirs. Perhaps he will even be able, because of the better knowledge and demands of his business, to make known some of his needs to politicians in such a way that they will stop and listen. Honorable George Geddes, of New York, well says: "Thus stands this body of industrious, active and well informed men, having many millions in their ranks, vast aggregate wealth in lands, and votes sufficient to dictate the policy of the country. Generally not so ambitious of office as desirous of having wise laws, honestly administered. Men who combine the interests of both cultivator and owner of lands have inducements that must ultimately lead them to the highest social and political position. The next generation with its increased capital and more cultivated tastes will devote more means and attention to making the homes of farmers attractive, which will add to the charms of country life, increase self-respect and public consideration."

Situated as we are in the suburbs almost of a rapidly growing city, we can more readily see the fulfillment of this prophesy. We must also face the fact of our fast changing condition, that we must make the farm pay on a much larger valuation or give it up to some one who will, and how, let me ask, can we better do this than by becoming commercial or business farmers?

We must raise the methods of farming to higher standards, to closer economy. I do not mean by this a policy of penuriousness. Emerson says, "True economy is not mean but liberal, and on the pattern of the sun and sky."

It is not economy to put a layer of fine nice potatoes on top of the basket and a lot of scabby ones in the middle; neither is it good business. It is not economy to cheat three to five pounds on the bushel, neither is it good business. I believe it is not economy nor good business to sell three pounds of wood and seven pounds of grapes for a ten-pound basket. It is good for the commission man and the basket maker, but not for the producer; his reputation is at stake, and, in the long run, prices adjust themselves to real weight or measure. Do not do it; by its practice we not only lose money, but character, which is a thousand times more precious.

There are wonderful possibilities in commercial farming in this great wealthy and enterprising state of Ohio. The cities demand the best that can be produced and are willing to pay for it. If we are willing to study and work along some line of special farming, in which care and thought are shown to have been given, and have the commercial tact to show this skill to others, it will develop that this combination which may be called commercial farming will, as Mr. Geddes says, increase self-respect and public consideration.

Successful farming demands the practice of systematic business principles. The day is gone when antiquated and slovenly methods in any business pays, and in no business is this more clearly verified than in farming. The successful farmer must have a love and taste for his business together with a well balanced, cultivated mind. He must get beyond narrow-mindedness and keep up with the times, profit by the improvements and progress of the age in which he lives, be willing to profit not only by investigation of his own labor, but the years of labor and investigation of others. He must study the wants of the markets of the world and raise crops most in demand and that consequently will pay the best, not forgetting to improve his lands by the proper rotations and fertilizers.

A farmer, though he may be called a successfull one, will scarcely acquire great wealth as estimated in these days of multi-millionaires, but he may acquire wealth sufficient for his needs, he may also broaden his mind and enjoy the poetic side of farm life, which by no means should be overlooked. Life to him is earnest and real and he who makes the wisest and best use of his energies will receive the largest returns for his labors in the profits that are the result of intelligent commercial farming.

THE VALUE OF METHOD IN FARMING.

BY WILLIAM C. COOMBS, LINDALE, O.

[Read at the Farmers' Institute Held at Laurel, Clermont County, January 8 and 9, 1904.]

Some fifty years ago, a Swiss watch manufacturer visited America. Switzerland had heretofore been the greatest watch making country of the world, America was just beginning. This Swiss manufacturer went back and told his countrymen that they must revolutionize their methods or the Americans would drive them out of business. Why? The Americans had "method," system, plan, organization, or whatever you may call it. The Swiss had not. The Swiss manufacturer employed workmen, each of whom had his bench, a full set of tools, and had served a long apprenticeship. Each one would make a watch almost complete by himself. No two watches were alike. The American began with a machine which made only one part of a watch, but made that part by thousands—every piece exactly like the others, and the machine perhaps feeding itself automatically and superintended by a boy. These pieces, all as exactly alike as nicely adjusted machinery could make them, were assembled by the so-called "watchmaker" and put together—making a much better and cheaper watch than could possibly be made in the old slow, painstaking way.

This was method as it applied to watch making, and it was so successful that it rapidly extended to all branches of manufacture, and put the American so far ahead that he was soon, not only selling his watches in Switzerland, but his manufactured goods in the markets of the old manufacturing centers of Europe. The American idea was "method."

Some of you are method-ists, and why? Because John Wesley studied out and set in operation a method or plan, for having the needs of the church's systematically looked after, and the wonderful growth of Methodism is due to the persistent carrying out of John Wesley's "method."

But what has all this to do with farming? Just this. If so great success followed the adoption of method in other productive industries, why not in farming? If method was good in church management, why should not we all be "method-ists'" in our farming? There is entirely too much haphazard farming. Most farmers have no well defined system. True, they look over their fields and perhaps, plan their crops one year ahead, but the next year they plan anew, and are perhaps found doing an entirely different kind of work. Their neighbors make a hit in some certain crop, by a combination of favorable circumstances and high prices, then they jump at the conclusion that there is money in that crop. They drop the things that they know something about and try the new crop, which they know little or nothing about and fail. This way of farming is not best for either the farmer, his pocketbook, or his farm. It is not good business practice, nor likely to produce the best results financially, nor to lead to any permanent improvement of his farm.

After a man has farmed for a few years, read and studied agricultural books and papers, and participated in the discussions of his grange, or club, or institute, he ought to be competent to decide what kind of farming will pay best on his farm, and what he can do most successfully. Having settled his kind of farming and how he will do it, he should stick to it. If his choice is fairly good, he will be far better off to follow it permanently. It is said that a poor plan is better than no plan. He may not have the best plan, but if it is fairly sensible and faithfully followed, it will be far better for the average man.

Rotation of crops is one of the more important applications of method system, in farming. It is well known that crops grow best when not grown continuously on the same ground, and that if the rotation is a good one, the average yield may be increased and the land grow more and more productive as the rotation is followed. A good rotation for ordinary farming is the following: First year, corn; second year, wheat, sown on the corn ground the preceding fall, with a liberal quantity of commercial fertilizer and seeded very early in the spring with clover; third year, the clover should be cut, the first crop for hay, the second crop either cut for hay, for seed, or left on the ground as a fertilizer. The corn and hay should all be fed on the farm and the manure spread as made, on the young clover or on the old clover which is to be plowed for corn in the spring. This makes only one breaking for three crops, and insures a clover sod for corn. It is a system that is simple, easily followed, produces a crop every year, and may be guaranteed to make a farm more productive the longer it is followed.

If the farmer plans for truck farming, he should consider well what kind of vegetables he can best produce and for which he can command the best market. A good quality at a cheap cost when delivered in the market, should be his aim. Then he should plan to raise these by the field-full and not in little patches. He should plan to have his fields prepared for the crops by preceding treatment, and his methods of cultivation the most effective and economical possible, using horse power and machinery. He would thus produce in larger quantities, of uniform and good quality, make for himself a reputation in the market, and produce in such quantities that the income would not only afford him a living, but a surplus. After a little experimenting perhaps to find out the best plan, he should adopt that plan—and stick to it.

But it is not only in the growing of crops that the farmer should do his work in accordance with a preconceived plan, but all the varied duties of the farm should come under the same rule. Take, for instance, the keeping of the farm in good order. A plan something like the following, carried out every year, would insure a tidy and well-conditioned farm. Very early in the spring let all trees and vines be gone over and pruned, dead trees removed, and all trash promptly burned. Next all fences should be gone over and necessary repairs made. All grounds to be plowed should be cleared of obstructions. All this before the actual farming begins. Between planting and harvest there is time for destroying grubs, docks, briars and other bad weeds. After harvest and before corn harvest, is a good time to make improvements and repair buildings. After the wheat is in and the corn gathered, continue improvements and getting in of firewood until the snows and sleets of winter set in.

What are the advantages of doing work according to a prearranged plan? First, the average farmer accomplishes very much more. He knows just what to to do and when to do it, and by what time it ought to be finished. There is no such time killer and energy waster as uncertainty and indecision. "A double-minded man is unstable in all his ways." Many a farmer does not keep up with his work, because he has not a clear idea of when it should be done and by what time it ought to be finished.

Second, it is good business training to be able to form plans and then work up to them, to make appointments and then keep them, to assume obligations and promptly meet them; these things lie at the very foundation of successful business management. The farmer's constant effort to carry out his plans will be a constant training school for him in this essential matter.

Third, it will enable the farmer to provide the necessary machinery. He knows what machinery will be helpful in his kind of farming and can buy that and no other. In these days of competition, every producer, whether he be a farmer or not, must have the aid of machinery and power, or he will surely fall behind his competitors. If the farmer marks off his corn ground both ways with a bar plow, drops it by hand and covers it with a hoe, plows it half a row at a time with a double shovel and cuts his grain with a cradle, he will soon find himself working for very small wages. Most likely, you will find him, after a few years of such labor, an ardent political reformer, trying to save the country from the grasp of the "greedy monopolists." We must have machinery, but a small farm cannot provide everything for every kind of farming.

Fourth, it will make of a farmer an expert in his line. This is an age of specialists; there is good reason for it. Few people can become proficient in all lines of work; most men must concentrate their energies on one kind of business if they attain to any unusual success. "If thine eye be single thy whole body shall be full of light." Some of you, perhaps, can remember a man who once lived near Foster's Crossing, who went by the name of "Sweet Potato Murray." He afterward moved to Chattanooga, Tennessee. The last time I saw him, he was superintending the filling of a specially constructed house with a crop of sweet potatoes which was estimated at fourteen thousand bushels.

Fifth, it will make the farmer more money. There is a paying market for any of the useful products of the farm if produced at a low cost and of good quality. Let me repeat those words. Good quality, produced at low cost, this should be the farmer's aim and is something he is likely to secure only by constant effort in one direction. He cannot become proficient in everything. Fewer kinds and more and better of those kinds should be his motto. When he has attained to this the money will come. Buyers will actually hunt him up, for they will find on his farm something worth going for. When he has only little driblets of almost everything, he must hunt the buyers and generally at a heavy cost of time and expense to himself.

The old plan of raising a little of everything so that if one thing fails another may succeed, is no longer a good one. Times and circumstances change, and why should we not change with them?

THE INTELLECTUAL GROWTH OF THE FARMER.

BY C. SHERMAN PARRETT, LYNDON, OHIO.

[Read at the Farmers' Institute Held at Frankfort, Ross County, February 19 and 20, 1904.]

To follow correctly the mental growth of any individual or class of individuals, we should first know what has been his primary and secondary education, but the early education of the agricultural people differs as widely as their methods of farming, and as we are not following any individual but simply offering a few general suggestions, we will pass this part by with few comments.

In the first place let us assume that a good education has been gained, and the farmer in question is established in his occupation. Then comes the proposition, How can a farmer, surrounded by his family and the cares which they bring, engrossed with his occupation and burdened with the demands of a complex civilization, find the time and means to improve, and not impair, his mental activity? This question confronts us at the outset; many people have mastered it while many have fallen by the wayside and surrendered themselves to a narrow circle of thought. The farmer has in recent years made great advances, and for this we applaud him and urge him to greater achievement. Governor Herrick in his address before the State Board of Agriculture last month lamented the fact that farming had not made the growth and improvement which other lines of business had—notably the manufacturing establishments. In other words, farming is not up to date, or has not kept pace with other occupations.

A great deal is being said and written these days about the agricultural department of our state university and its value to the farmers' sons and daughters. That is helpful as a specialty course, for technical training in this particular branch is the best we have to offer the young man of today. Not so much is being said about sending the farmer's son to a literary college and then letting him choose the farm as his place of business and vocation for life. This latter method is the one which I had the good fortune to follow. What I missed in technical training in agriculture I think I gained in other ways. However, I was interested not long ago in looking over the catalogue of my Alma Mater and noting the vocations of the different members of my class, thirty-five in number. They are located in almost all parts of the globe, and the professions have claimed nearly all of them; three are catalogued as business men, two are farmers, just one other besides myself has the good fortune to be on the farm. This instance shows what a small percentage of the men who take advance courses of study return to the farm and how difficult it is to get them to choose agriculture as a vocation.

Let us now consider the common belief in regard to advanced training for the farmer. There is an impression abroad in the land that it is rank foolishness to educate young men and women and then have them spend their lives on the farm. No greater mistake was ever made. There is another life to live after the daily hours of toil are over. It is the intellectual life; then the mind rises above the daily toil and reaches out for broader and nobler ideas. A man is no better than his best thoughts and the more time he can find to dwell upon these, the greater will be his intellectual culture. There are the short summer evenings, the occasional idle day, and the stormy months of winter with their long evenings, which are so often spent in the village grocery, that daily rendezvous of all the masculine gossips in the country; the rural paradise of both chronic and occasional loafers. There they perch upon the counter, and sit along the single bench like fowls upon a roost, and dogmatize on questions political, theological, financial, and social. Tell me where a man spends his idle hours and I can tell you the beat of his mental pulse. Nothing is so harmful to mental growth as loafing. Therefore, do not loaf. Economy of time is the great principle of advancement. Along with economy of time comes economy of means; save for the small advantages and the larger ones will follow.

There are several valuable steps to mental growth which now claim our attention, and will aid the man who has not had advanced training in his early years. A small library is indispensable. The library need not be large, for in most communities there are either local or traveling libraries which are accessible to every one. The library should be general in character, containing a variety of subjects, and the works of the favorite authors of the reader; also the literature relating to the pet hobby of the reader, for he will likely have one. A few good magazines should also be added to the list. However, extensive magazine reading is not to be commended. The daily paper, too, has its place in the home, but fifteen minutes will suffice for all that is worth remembering in the average daily. The local or county paper also has its place for locals. One or two special agricultural papers are valuable if any specialty is being followed by the farmer. Reading along the lines of political and social economy is perhaps the most broadening to a man of mature age.

There is another factor in the farmer's mental make-up which is of importance, and that is his vacations; these should give pleasure and profit combined, not business and pleasure, but pleasure and intellectual growth. Vacations are the bright spots in life and should be planned as regularly as his crops are planted, but not at the same time. Every farmer can find a convenient time to be absent from his business affairs during some part of the year. Places of interest historically, politically and commercially should be visited and the best in every line as far as possible should be observed.

But, you ask, how can he accomplish all this? Economy of time and means must be strictly adhered to, and years of time spent in honest industry and frugality. This will not be acomplished in one year, nor in ten, but a whole life time must be spent before the mind reaches its fullest development. Algebra and geometry will be forgotten and the contents of many academic and college text books will pass into oblivion, but they will have done their part and trained the mind to grasp the great principles of life and of complex civilization. A taste for solid reading must be acquired if not already gained through early education.

Farmers, give your sons and daughters a liberal education that they may have a taste for better literature and nobler ideas and rise in intelligence above neighborhood gossip. You may not have as many broad acres, or as large a bank account to leave them as their inheritance, but they will inherit some-things of greater worth which no defaulting cashier can embezzle, something which no turbid stream can wash away, something which no conflagration can consume, something which will not overgrow with moss nor corrode. Then will they rise up and call you blessed, because you did your duty and indicated to them the way to true mental growth.

OWNERS AND TENANTS OF FARM LANDS.

BY M. M. CLAWSON, OKEANA, OHIO.

[Read at the Farmers' Institute Held at Ross, Butler County, January 4 and 5, 1904.]

The subject I have chosen may interest only a small percentage of Ohio farmers and I promise in the beginning to treat it as briefly as possible. And yet I believe the subject of owners and tenants of farm lands is a living issue with others as well as myself, who have arrived at a time when advancing years and lack of strength make them dependent upon some one to cultivate their lands. Besides, there are others who buy lands as an investment and rent them as a business venture that may be interested. Having had experience as a tenant and also having rented my farm for several years, I will give my views briefly, as I said.

The man of affairs who has mastered the science of handling men to the mutual benefit of all concerned has laid the foundation of a useful career in whatever industry he is engaged. In renting a farm the following results should be accomplished: The fertility of soil should be maintained or increased, repairs and improvements carried forward, the farm made to pay a reasonable interest on investment, and the tenant's profits should in a few years make him able to become the owner of a modest home. My purpose in this paper is to demonstrate how this can be accomplished.

I prefer to rent one year at a time, grain rent. In selecting a renter I try to use my best judgment with a view of securing a man of unimpeachable honesty. I prefer a young couple of industrious and economical habits and do not care how poor they are. One can afford to take a financial risk on such people and never loses, except in case of sickness. Now, I would say to the American boy, the eye of some proprietor is on you; if you prove worthy by your conduct the door of opportunity will be open to you later in life. After I have noted the deportment of such persons as described above I explain the terms and conditions and draw up a written contract covering the most important features of the agreement. Not that I expect to go into court to demand the enforcement of the contract, but I find many well-meaning people are likely to forget the terms agreed upon.

When my tenants are once established and have shown that they possess the proper traits of character I impress upon them the wisdom of becoming proprietors of their own home. There is nothing that so strengthens the arm and quickens the brain as the hope of becoming a home owner under the stars and stripes. When I have created the proper amount of enthusiasm I see to it that my tenant has plenty to do between crop seasons at a fair compensation. Such labor in all cases should be applied to increase the fertility of the soil, so as to make crop failures less frequent; to remove stones or stumps, or any or all obstructions to a speedy and easy cultivation of the soil. The right kind of a tenant will render a faithful service at a fair price. We frequently hear it remarked that a farm has been rented and is run down. There must be bad management somewhere when land becomes impoverished. It is only united efforts of owner and tenant that lead to best results.

I have known tenants who were compelled to build and repair fences to protect their own crops. And I have also noted that while the tenant was at home busy with his work the owner, with more leisure to study the markets, would seek to buy the tenant's share with a view to speculation. I have no faith in a grab game between owner and tenant. The business must be transacted on a higher basis of equity and fairness. Land owners, you have a right to expect stalwart honesty and industry of your tenant. Deport yourself so as to merit his confidence and esteem. The tenant can well afford to go beyond the written contract in careful diligence to keep things tidy and neat about the buildings, etc. The owner can repay this by assisting him to get the strength of the market for his products by giving him employment between crop seasons, and when surplus capital begins to accumulate counsel and advise as to investments.

But suppose I make a mistake in selecting a tenant and he has proved a disappointment. I simply allow the year to expire as smoothly as possible and try another that I have been keeping in view. But when I have a tenant that suits me I try to make it to his interests to remain by having my farm in such a state of cultivation that he cannot better himself elsewhere, and this can only be done by a greater outlay in drainage, fertilizer and clover than most rented farms receive.

In addition to what has been said, the purpose of this paper is to emphasize the importance of establishing such a relationship between owner and tenant as will lead to the best management possible. One man possesses capital, the other labor. Separated, they are in a measure useless; united, they bring a livelihood and success to both parties.

How important to find a working basis. Allow me to repeat and emphasize that this community of interests must be builded on the basic principle of honesty and fairness to achieve the greatest success.

In conclusion, no good business man allows himself to become petulant and fault-finding whether he be owner or tenant; therefore errors and mistakes should not be magnified, a spirit of tolerance must be exercised to produce a compatibility of temperament and clear minds to create a unity of plan and purpose so necessary in this age of American agriculture.

THOROUGHBRED STOCK.

BY ARTHUR GERLAUGH, OSBORN, OHIO.

[Read at the Farmers' Institute Held at New Carlisle, Clark County, February 1 and 2, 1904.]

By tracing the world's advance along the different lines of husbandry during the last one hundred years we find that the United States has made a wonderful improvement, but it has not yet reached the high standard of excellence which has been raised by the live stock countries of the Old World. They have put brains into their work; sons have taken up the work where their fathers laid it down and have carried it on with renewed vigor. They did not need to experiment as to the results, because they knew their needs and the best way to supply them. We have much in this country to help keep down the money-making type of live stock. The West is trying to overcome this important fact faster than we, who live in this the world's most famous corn belt. We feel that land has not yet reached such a value that we can afford to keep on our farms only the very best pedigreed sires obtainable. It is a well-grounded fact that cereal farming is a thing of the past; a different system must be adopted; we must combine cereals with stock raising. Our forefathers came to this country when the land was in its prime, capable of doing all in its power for man without much time and labor, but we live under different conditions. The wealth of the United States is, indeed, in the soil, and some men think it is so rich that they cannot exhaust it, but we can exhaust it and we are doing so. We never find one industry alone, and closely associated with the cereal industry is that of live stock husbandry. We must combine the two if we would succeed on the farm. Today we must give back to the earth a part of the crop in some form in order to maintain its fertility, so that we may reap a full harvest the following year, and the best investment that we can make for the good of the farm is a first-class pedigreed sire, so that the offspring will consume our farm products to the very best advantage.

The live stock of our country is showing a vast increase in value, and the demand is great, but is still growing. The demand for extra prime steers cannot be satisfied with the general run. Many people can not increase their accommodations for handling more stock, and if they succeed they must increase the quality. The future will demand an animal of a higher type. People will be willing to pay more for an animal if he has the required merits. The demand has not only increased, but the individual merits which an animal must possess have also increased. The only way by which we can increase individual merits is by the careful selection of a well-bred sire, remembering that because a sire has a pedigree it does not always follow that he can be a benefit to our stock. He should be selected with a view of betterment and should be an animal that will be easily handled and profitable to his owner.

Not many years ago it was thought best to grow a steer first and then fatten him, but after carefully studying the question our professors and leading cattlemen say that a steer should not lose his early start. This all tends toward making a higher class of beef and an animal with more substance and finish.

By studying the methods of breeding followed by the men who have their names recorded in the history of the live stock world we find the principles which underlie their success as breeders. They worked for some definite purpose which they always kept in view. Amos Cruickshank worked for the thick fleshed, block type of cattle which are the show yard favorites of today. Sires which possess a large amount of Cruickshank blood will carry its merits along in their breeding. Champions are not produced by an accident of heredity, but are the result of systematic planning. There are some exceptions to this rule in occasional winners, but when we examine the records they show that an animal can not breed up to its standards unless it has a long line of ancestors which have carried its type and quality. Quality is the one thing much sought for in the production of beef.

The market demands of the country are growing at a marvelous rate. The fat stock shows are doing much to increase the high standard of feeding cattle. The best beef obtainable is developed in the shortest time, and the better the blood the sooner the animal is finished. The animal which matures early is the money maker for the farmer. The carcass is well marbeled and the high-priced points carry their respective share of the flesh. When we can produce cattle and horses good enough to create a demand for them the world over they will be of higher profit. The United States today exports a large amount of beef and pork. This amount contains the better class of meats. The pork is produced cheaper than any other class of meat on the market. The hog must be grown rapidly from his early days until the time for his marketing. He must be grown so that the lean and fat are well streaked and thus make an attractive carcass. To accomplish this he must have a well-formed body, a deep and wide chest, a broad back and a set of good legs; he must be well bred in order to grow well in his early days, and then he feeds and fattens well.

The breeding of horses has attracted much attention among the farmers during the last few years. The required individual merits which a horse must possess to sell well today are many. France is trying hard to produce good, useful horses and is very strict in her requirements as to breeding horses. The good disposition and high qualities of his ancestors will be carried along in a stallion's posterity as well as other qualities.

Every line of industry has its demands, and he who would succeed must study the needs of his line of work and the best way to meet them. Everywhere the animal with a strong constitution is in demand. This will enable his posterity to withstand the rigors of the climate and also to mature early, thus yielding prompt and full returns in the feed lot for all forage and grain consumed. The demands can only be met in the future by building up our small herds and flocks now. Have quality and not quantity. That animal should be spurned which does not show plainly the qualifications demanded.

RAISING AND FEEDING CATTLE.

BY N. L. SCHEIN. R. R. 1, WILLIAMSPORT, OHIO.

[Read at the Farmers' Institute Held at Williamsport, Pickaway County, February 17 and 18, 1904.]

I would like to say a few words in favor of raising and feeding cattle as a means of profit to the farmers of this section of Ohio. In the first place, I would impress on the minds of the farmers the importance of husbanding the natural fertility in our soil and in supplementing it by disposing of our crops in such a manner that there may be as little waste of fertility as possible. If we persist in selling our grain and grass in the form of hay, and our roughage, such as corn fodder and straw, year after year our soil must become exhausted and be harder to farm, because it will lose its friability, thereby also losing much of its ability to hold moisture, for you know that a soil which is deficient in humus will become hard or baked, as we call it, much sooner than a soil which has the advantage of a clover mulch, or the admixture of barnyard manure.

Now, as our general rotation is corn, wheat and clover, I claim that one of the best ways to dispose of our corn, grass, hay and straw is to feed them to cattle, the cattle to be followed by hogs, which are a most necessary adjunct in making cattle feeding profitable. And when I say cattle I wish to refer to the beef class. I have no prejudice against dairy cattle, but I think, taking all our environments into consideration, that we are not well situated to make butter. We have no springs of running water, ice houses are not in general use with the average farmer, and butter making requires expensive machines in the shape of separators. Again, where would we get the help to milk and care for from a dozen to three hundred or more cows to the farm, which would be the condition if all of our farmers should go into the dairy business. Neither do I wish to get into a controversy with the friends of any of the different beef breeds, as I think they may each lay claim to some especial excellency. Suffice it for me to say that if one has a preference for any certain breed, he would better keep that breed, as a man is more likely to succeed with anything which pleases his fancy than with a variety which he depreciates in his thought of it. Any business needs enthusiasm in its devotees.

Whether you raise or buy beef cattle let them be of the often described blocky, thick-fleshed type, covered with a fine coat of glossy, silky hair, with a well-sprung fore rib, straight top and bottom line, a bright, full, active eye, and plenty of brain space, all of which denote an individual of vigorous constitution, combined with early maturity and strong digestive and assimilative powers, which will round up your individual into a satisfactory carcass when it reaches the block. As this is the ultimate end which we are all working for in the production of the beef animal, namely, to please the purchaser of the beef at the block, and as he is the man who pays us for all of our trouble, let us strive to meet his desire, which is a moderate amount of bone thickly covered with tender meat. By all means avoid the leggy, slabsided, bony, sleepy-eyed, sharp backboned type that we so often see in the commercial stock cattle which are shipped or driven into our section of the country. They seem to be a scrub breed with a generous cross of dairy blood, and I am sorry to say that we raise some such cattle. They do not make satisfactory feeders and are not satisfactory sellers, as, no matter which end or side of such an individual your buyer approaches, you are sure to wish that he had approached him from some other way. When they reach the market they must be sold at a lower range of prices, because they do not cut profitably and because their meat falls into the same class with a cheap class of meat with which the markets are generally full to overflowing. Neither are coarsely built cattle, which are slow to mature, in good demand, but rather young, fat, smooth cattle of about twelve or thirteen hundred pounds, outselling those of sixteen hundred pounds or over.

Having enumerated some of the principal characteristics of the ideal beef animal and some of the requirements of the trade to be met, how shall we grow this animal? In the first place, get good blood. I prefer thoroughbreds as the most satisfactory, but if you think them too expensive try to get high grades and keep culling out the poorer specimens, keeping only the best. You may consider this way the cheapest, but I doubt it, as I consider a good thoroughbred cow at a hundred dollars cheaper than a grade at fifty, because six or eight calves from the thoroughbred will outsell a like number from the grade for more than enough to make up the difference, not to say anything about the influence upon your herd, if you should keep any of them for breeders.

You will hear the expression from some one that he has a grade that is better than some one else's thoroughbred. Now, you will generally find such a grade a sport, or exception to the rule, and the animal will lack prepotency or ability to transmit its best qualities to its offspring to a marked degree, but there will crop out forms and characteristics of its ancestors which may not be seen in the sport at all. On the other hand, the thoroughbred stands for a type which has been fixed and bred in line for generations, and if it "breeds back," as we hear it expressed, you may get better specimens than the parent, while with the grade the reverse will be the result.

Always remember when you buy breeding animals to trace back as far as possible, the grandmother and great-grandmother having much to do with the future progeny. In fact, this is the virtue of a recorded pedigree. It enables you to trace the blood lines of the ancestry of an animal from away back and to determine whether its lineage is meritorious or not. This applies, of course, to breeding animals. If you are buying feeders you simply look at the form and general characteristics.

I would have the calves come in the spring, from February to June. It makes stronger calves to winter the first winter. Let them have their mothers' milk; give them all of the milk they can take; if not you can sometimes put two calves on one cow if she is a good milker. If you wish to save labor you can let the calf run with its mother, but I think it is easier on the cow if you keep them separate and turn the calf in with the mother twice a day, and in this way you can feed the calf some bran or other feed during the day, beside all the grass it will eat. Be sure to provide pure water for them to drink. And let me say here that the best way to water any stock is to have the tank so arranged that they can go to it at any time and drink at their leisure, as it is much more profitable than to water them once or twice a day, as we see some people do. By the latter practice they will be gorged part of the time and suffering thirst part of the time, which are conditions that will not produce the best results. It is not only the comforts of our animals which we should keep in mind, but our profits also, which will be much greater if we give them the best care in our power.

Now, if our calves have come in the spring months, some time in September or the first part of October will be a good time to wean them, and if I am feeding some cattle at this time I like to let my calves run with them, because the calves will get to eating corn in that way without any trouble; they will eat the broken pieces and seem to delight in aping their elders, in which respect they very much resemble human children. About this time of year, when the grass becomes short, it is a good thing to have some clover hay for them to eat; in fact, we can hardly have too much clover hay for them at any time, but especially at weaning time we want to feed them well to make the change of nutrition seem almost unnoticeable to them. I have an open shed for them to run in during the winter time which I fill with clover hay and let them eat it empty at their leisure. I nail a row of boards along the bottom of the shed, about knee-high to the calves, and a second row about eighteen inches higher up. When they have eaten all of the hay in reach, I fork a new supply against the boards, practically making it a self-feeder, which saves time, and the calves do not waste much of the hay. The hay need not be of the best quality. If I get some wet in the field I put it in there, or I sometimes cut rank spots in the pasture after harvest and put it in the shed, and they always clean it up.

During the first winter I feed them shelled corn and bran mixed, especially if they are small or do not eat corn well, but if they will eat broken corn or nubbins I would rather feed it to them in that form, and like to feed as much of it as I can, as it makes the manure higher grade and is besides a surplus crop. For roughage I give them corn fodder if I do not have enough clover hay.

Having fed them well the first winter, I graze them the following summer, and feed them corn fodder the second winter, with an addition of corn for about two months towards spring, feeding the corn in the fodder, thereby saving the husking. I like to feed them around a straw stack. They will eat a great deal of straw and make bedding and an absorbent of that which they tramp under foot. I want to use all of my straw on the farm, not considering it profitable to sell any of it to the strawboard factory, as straw is a good source of humus on our farms, and especially good if applied to the clay portions of our soil.

I graze them again the third summer until about the middle of August or first of September, when I begin feeding green corn, gradually at first, but soon bringing them up to full feed and feeding them about ninety or a hundred days at an average gain of not less than three pounds per day. I do not consider it wise to feed sparingly, for a certain amount of the feed is required as a maintenance ration, and each day that I feed them they will take out enough first to sustain their weight, and the gain, if any, must come from the excess of feed consumed above this amount. You will readily see that the percentage of profit will be greater if I feed them enough to produce three pounds' gain than if I feed them only enough to make one or two pounds' gain per day, the maintenance ration being the same in each instance.

I have now outlined the life of the calf for about thirty months, when it should weigh from fifteen hundred to sixteen hundred pounds, and should bring five cents per pound or more, the average for the last five years being above this figure. You may ask why do I feed the cattle off at this time of the year. I would say because I begin with corn in the most profitable stage to feed and because the weather is more favorable for feeding at this time of the year than later in the season, when it becomes cooler and more stormy and the maintenance ration must be relatively higher. As I have mentioned in the foregoing part of this paper, lighter weight cattle bring higher prices than those weighing sixteen hundred pounds or over, and if the demand arises for still lighter animals I shall have to feed them off a year sooner, making them weigh from eleven to twelve hundred pounds, provided the consumer is willing to pay me for my trouble. Now, in summing up let me say that I have not stated any extraordinary conditions or results, but have tried to state conditions which any farmer may meet, and results which may be improved upon with especial care and effort.

I hope I may not be considered egotistical when I say that I think Pickaway County should take a foremost position in the production of beef cattle. We have five hundred of square miles of territory, with scarcely any waste land, with good pasturage and with a corn production of from three to four million bushels per year; a cereal which is noted for finishing up the finest quality of beef, and with its large milling interests whose waste products will enable those wishing to feed a balanced ration to buy feed without excessive freight charges. With these natural advantages should we not all strive to push an industry to its fullest capacity, which solves the vexatious problem of scarcity of hired help on the farm to a great extent? This is a business which pays a fair percentage of profit, besides building up our farms in fertility, and a business whose outlook gets brighter as our manufacturing interests increase year after year. Now, brother farmers, do you know of any branch of industry in which the participants are not trying to produce the best results with their efforts, by investigation, by experiment and by the application of careful business principles? Therefore let us wake up. Let us determine to make the most of our advantages. Let us not be content with raising or feeding second-class or third-class cattle, but let "the top of the market" be our motto.

PROFIT IN THE SHEEP BUSINESS.

BY GAIL T. ABBOTT, MEDINA, OHIO.

[Read at the Farmers' Institute Held at Chatham, Medina County, January 29 and 30, 1904.]

During war times, when wool prices were sailing skyward, and afterwards, until from various causes wool dropped down so low that from twelve and one-half cents to fifteen cents was the best the wool producer could get for the very finest wools, almost every farmer in this part of the state had at least a few sheep. The wool from a good flock paid for the keeping and the increase was clear gain. The wethers were kept until they were three or four years of age before being fattened for mutton. Suddenly all was changed. Sheep were butchered by the thousand for their pelts. Hundreds of farmers cleaned up their flocks and turned their attention to other lines of stock raising or to that suicidal business called grain farming. Today the pendulum has swung back part way, and yet there are hundreds of farms in the state upon which the golden hoof of the sheep never treads from one year's end to the other.

Is it true, as so many men say, that there is no profit longer in the sheep business? You will find in almost any neighborhood a few men who, through high prices and low prices, through prosperity and adversity, have continued to keep sheep and who say there is some money to be made in the business. Why is this great diversity of opinion? Why do two men living near each other, having similar soils and conditions apparently much alike, reach conclusions that differ so widely?

The first statement that I wish to make is that the profits vary not in the same ratio as the sheep vary, but in just the same ratio as the shepherds vary. Of some men we can say at once that they will never succeed with sheep so long as the world stands. The sheep is a very dainty animal and will tolerate nothing about its food or drink that is not absolutely sweet and clean. He will go hungry and thirsty rather than eat from an unclean trough or drink water that is the least bit fouled. When starting feeding lambs in the fall we first thoroughly scrub out the trough with hot salty water and a clean broom. Then carefully sweep out the trough each time before feeding grain, and scatter in a sprinkling of fine salt.

Again, sheep are by nature very shy and suspicious of anything new. The man who is always in a hurry cannot expect to attain any great success. In order to do well all stock must be kept quiet. If the feeder dashes into the pen or lot, slings down a little feed and dashes out again he is going to scare away an appreciable portion of the gain made by the preceding feed. Then, too, it is necessary to quietly stand by occasionally while they eat and observe whether every one comes up promptly and gets its fair share of the grain. If not, try to discover whether you are overfeeding or if there is something ailing the individual. I have seen wether lambs that thought they could not get their horns into rack. Often once catching and turning the head to let it slip in is enough, but it may be necessary to saw off the ends of the horns. If the lamb refuses to eat and stands all stretched out, with his fore feet up on a beam or rock, you may feel pretty certain it is a case of indigestion, and a good dose of salts often will remedy the difficulty.

Perhaps a description of the methods of two shepherds will illustrate my point. Mr. A some years ago bought a bunch of stock ewes of uncertain ancestry, but apparently having a strong mixture of mutton blood in their veins. He purchased a ram whose breeding was unknown because he was cheap. His ewes were thin, but no grain was fed during the fall because grain was high and sheep ought to be able to live well enough on pasture. The same method was followed with the ram and during the mating season he was allowed to run with the flock because the owner did not have time to bother with him every day. The flock remained in pasture until the snow became so deep that they coud not get at the grass and were then shut up in the barn and allowed all the corn fodder they wanted and were watered occasionally or allowed to eat snow. Being fed nothing in the lot, there was little incentive for exercising. No salt was provided.

Along toward spring some of them began to look pretty thin, so they were fed a little corn. The owner was always in a hurry when he came to feed them and the sheep, dashing about to keep out of his way, a number of them were hurt during the winter, abortion being the result. Toward spring the little fellows began to appear, weak, puny, frail, with hardly vitality enough to utter a plaintive protest against appearing in such a cold, cheerless world. Many died from cold and exposure and lack of nourishment, for the mothers got no grain and the grass had not yet started. The lambs had to take their chances with the old ewes and were often knocked down and trampled upon. One or two crawled through a hole the owner had failed to close up, into the hog lot, and met a violent death.

But the south winds blew and the warm rains came and by-and-bye out they all went into the pasture lot and for a time everything seemed to be doing well. However, along in July some of the lambs began to grow thin and act as though they suffered from "that tired feeling." Their skin became pale and their eyes dull. If they tried to hurry for a few rods they gave out completely. If one was picked up he was found to be of exceedingly light weight and one by one many of them passed away to that better land where internal parasites never trouble and lambs do not have to eat spears of grass that are too short for the old sheep to get hold of. The owner, being busy, did not get around to wean the survivors until winter came, and then it was a small job, as only a Gideon's band was left.

Mr. A continued to keep sheep in the foregoing fashion for a few years and at last left the business in disgust because there was "no money in sheep."

About the same time that Mr. A purchased his flock Mr. B, a near neighbor, invested in a flock of aged ewes, buying them of a breeder of good sheep, but as they were culls he paid about the same price as A did for his. He then brought a pure bred sire of the same breed as his ewes, for he knew that the sire was at least half the flock. He began to feed a little grain a few weeks before coupling and continued it during the mating season. The ram was fed a ration of oats principally, with a little bran in it, and carefully cared for. Every day during the winter when the ground was frozen they were fed once a day a ration of corn stover in the lot, thus compelling them to take exercise, without which one can never expect to get strong, healthy offspring from any kind of breeding stock.

The racks in the shed were carefully arranged so they would not unnecessarily jam themselves in moving out of the shed, and as far as possible all the racks inside stood with the end to the door so that there might be a straight runway from any part of the shed out of the door. The doorway was quite wide, for when sheep are let out daily for their grain they always go with a rush.

These sheep were furnished plenty of pure fresh water and a box containing salt and sulphur was always within their reach. Part of the flock was in good flesh early in the winter and part rather thin, so they were divided and the thin ones grained. Once a day they were fed all the bright clover hay that they would eat up clean. Towards lambing time they were all given a ration consisting of bran and oats, the larger proportion being bran. Each ewe was carefully tagged and her feet trimmed.

During the lambing season the shed was pretty well closed up during the night and if very cold Mr. B rose at midnight to see that all was well. Many a lamb was saved to help swell the profit side of the ledger that would otherwise have been beyond help by morning, for if the little fellows can once get onto their feet and get one good square meal they can stand a good bit of grief. Each ewe and her lamb was put into a little pen three feet or four feet square for a few days to get thoroughly acquainted with each other. If, as sometimes occurred, a young ewe failed utterly to feel any sense of responsibility for her first offspring, she was shut up with it and soon began to take a sensible view of the situation. Mr. B had a few ewes lose their lambs, but others having twins at about the same time, one of the twins was shut up with the bereaved mother, who in a few days seemed to think as much of it as though it had been her own. This process often took a week, but always won in the end, care being taken to assist the lamb to a square meal several times a day.

A creep for the little fellows was constructed where they could eat and lie down by themselves. Their trough was carefully cleaned out each time and the grain given to the ewes, while fresh grain was put in for the youngsters. Before the flock was turned out to pasture the ewes were all treated for stomach worms. They were each given half a teaspoonful of coal tar creosote in about one-third of a glass of water. During the summer they were frequently changed from one pasture to another. In early August the lambs were weaned and given the same treatment for stomach worms, giving, however, only half as much creosote. The ewes also were treated again in the fall. The weaned lambs, with two or three sensible old ewes, were turned onto the fresh wheat stubble meadows and each day given some grain—oats principally. By this process they went into winter quarters strong, hearty and vigorous. Mr. B had made some money on his sheep, while A had not. It needs no philosopher to decide why in either case.

Now, my friends, I suspect I have said but very little that you did not already know. All that I hoped to do at best was to recall to your minds some of the things that all sheep men know, yet sometimes become a bit lax in practicing. In leaving the subject with you I wish to quote from a well-known Institute lecturer: "If we should all do as well as we know how to do we should certainly do much better than we do do."

MAIZE CULTURE.

BY A. A. HUBER, HICKSVILLE, OHIO.

[Read at the Farmers' Institute Held at Hicksville, Defiance County, December 28 and 29, 1904.]

Maize, or Indian corn, is believed to be a native of the warmer parts of America and was cultivated here by the aborigines before the discovery of

America by Columbus, but discoveries made in some of the houses of the ancients at Athens have led some to believe it to have been also a native of the east and at a very early period cultivated there. Some believe it even to have been the corn of scripture, but if this be true it is hard to account for the neglect of it until after the discovery of America. It is now extensively raised all over the world (or nearly so) and is far in the lead in production of all cereals, and is known by the well-earned title of King Corn. Especially is this true in the United States, where was raised in 1901 a product of between two billions and three billions of bushels, with an export trade of nearly one hundred and seventy-nine millions of bushels.

The growing and ripening season of maize extends from six weeks to five months, owing to the locality and climatic conditions where it may be grown. The earlier varieties have almost invariably proven themselves to be less productive than those which require a longer time to mature. The ideal maize ground is a deep, loose, loamy soil, but it can be raised on any soil except a light compact clay or wet, boggy one. Any soil that can be thoroughly underdrained will raise corn. Hence we infer that underdrainage is the basis of corn culture, and to be sure of success each year the land should be thoroughly and competently underdrained. No fallible rule can be given as to what constitutes thorough underdrainage. The kind of soil, together with the condition of the surface of the land, has much to do with the necessary depth of the drains and the distance between them. True success can be attained only by having a sufficient outlet and the tile laid to such a grade as will insure a quick removal of the surplus water from off the ground, for nothing is more injurious to growth and development of corn than an overamount of water lying on the ground for any length of time.

Sod land is acknowledged by all to be exceptionally the best for a growth of corn. We find generally in the spring before the plowing is done a luxuriant growth of grass or clover covering the ground; this, plowed under, furnishes quite a bed of green manure. Soon after being plowed under fermentation sets in, the sod decays rapidly and nitrification succeeds the fermentation; such plant food as the grass has taken up is in the form of nitrate and this nitrate is eagerly and rapidly taken up by the corn; if the grass land has previously been manured, the greater will be the grass or clover and the more plant food will there be available for the corn. We, upon our farm, prefer a clover sod for the reason that the bacteria on the roots of the clover perform the essential office of trapping the free nitrogen from the air, which adds the most costly plant food free and makes the soil more friable and more easily put in condition. Other grasses beside the legumes have not this power. We find by experiment where the grass and roots to the depth of three feet in the ground have been carefully taken up and dried that two to six tons have been taken from an acre. This is an enormous amount of humus, of which corn is very fond.

The preparation on which we build our hopes for a good corn crop is to make and apply all the barnyard and stable manure possible, exerting all our energy to save the liquid as well as the solid manure; the products of the farm are nearly all fed upon the farm. What is sold is replaced by feed containing better manurial values than those sold. Our corn ground we cover if possible at the rate of twelve loads to the acre, very evenly and finely distributed. If lumpy we use a fork and go over it, making it fine. If the second crop of clover is threshed for seed the haulm is hauled over the thinner parts of the field and spread very evenly and the stable manure is then spread over it. If we get all the ground manured and have any to spare, the thinner parts are again gone over at the rate of eight loads to the acre by changing the spreader. The earlier the manure can be applied to the clover the better the results. The corn is invariably better where the manure is put on the last of August or early in September than where it is put on through the autumn, winter and spring as it comes from the stables. If the second crop of clover is left on the ground and the manure spread over it, the results are better to a remarkable degree. A wheel is used on our plows and they are kept sharp that a uniform depth of furrow may be turned and this to a depth of six or seven inches. A lesser depth may bring as good corn, but the rubbish is not so well turned under, nor do we think the ground can be as well kept up. If we plow deeper it is done very gradually about a quarter of an inch at a time. Deep plowing gives a deep loose soil for the roots of the corn to revel in. The clover is left stand but one year and we are pleased to see it have a good growth before plowing. It is intended that the manure should feed the clover and the clover feed the corn.

As soon as the land is plowed and becomes sufficiently dry we follow immediately with a spring-tooth harrow, using three horses, stirring it very deeply and thoroughly that the earth may receive a complete mixing. After the field is thus plowed and mixed we cross the furrows with a scantling harrow made out of four by four strips strung on two iron bars or rods diagonally. This is followed with a steel smoothing harrow set as deep as it will go having levers to arrange the teeth to run on an angle. The fourth harrowing is on an obtuse angle with the furrow, and done with the smoothing harrow, setting the teeth somewhat at an angle. If any part needs more pulverizing, this is kept up until all is in fine tilth.

The roller is used just preceding the planter to firm the soil that the planting may be done at a very even depth.

The planting is done in squares usually, the distance being three feet six inches. If drilled, the width of the rows is three feet, ten inches by seven inches in the row and the corn is planted to a depth of one and one-half inches.

The seed corn is selected in the autumn before cutting, or in the early part of the husking season before there have been any freezes. It is selected from the best corn in the field and the ears taken that are entirely filled out at the tip, without room for another grain, and very close up to the stem, not too large a cob, and a very uniform, deep grain, solid and of good length. This corn is strung on wires and stored where it never freezes during the winter, and is shelled just before planting.

As soon after planting as is convenient, say the second day after, we begin to run the smoothing harrow over the planted corn. We like to do this at least twice before the corn comes up, setting the harrow teeth at a sharp angle so the crust is simply broken, making an earth mulch, leaving the corn, if possible, undisturbed. After the corn comes through the ground it is not touched with anything until the rows can be seen plainly across the field; then the cultivation begins. The first cultivation is given as deep as the cultivators will go (we use an eagle claw walking cultivator) and as close to the corn as possible as the roots of the corn at this time have a downward growth and will not be broken by the cultivator. The weeder is run after this cultivation. Each subsequent cultivation is more shallow and further from the corn, as the ground between the rows soon becomes filled with lateral roots, which if broken will retard the growth of the plant. The last two cultivations are given with a one-horse cultivator, going once in a row, having a wheel in front and bar behind to regulate the depth, and bar shares on the outside so that the ground may be pushed close to the corn. This shallow cultivation creates an earth mulch which in case of drouth checks the capillary action and retains the moisture for the corn.

The cutting of the corn is begun as soon as the ears are thoroughly glazed and before the stalks are much dried. The cutting is done cheapest with us by hand or a sled cutter. The corn is put in shocks 8x10 or 10x10 and securely tied at once. The husking is cheapest and best done by hand, if possible to secure such help, the stover being hauled to the barn as fast as the ears are removed. Nothing deteriorates as fast as stover standing out after husking and this if carefully cared for is as valuable as the shredded stover, but not quite as convenient to handle.

Following is a table that may be of interest, showing the cost of corn grown on our farm in 1903. The corn was weighed and figured at seventy pounds to the bushel, the ground accurately measured and an account kept of all labor and expense.

Cost per Acre.

Plowing	$ 1 25
Four harrowings	80
Rolling and planting	40
Seed	15
Two harrowings after planting	40
Cultivating five times	2 00
Weeding once	10
Cutting	1 75
Husking	3 75
Hauling fodder	1 00
12 loads of manure	10 00
Taxes and interest on investment	5 00
Total cost	$26 60

Value of Product per Acre.

81 bushels of corn @ 40 cents	$32 40
1½ tons of stover @ $2.00	3 00
Total value	$35 40
Profit per acre	$ 8 80

Valuing the land at $75 dollars per acre we have a profit of 11 11/15 per cent. on the investment over all expense, taxes and interest.

POTATO CULTURE.

BY A. A. CROSIER, R. R. 30, COPLEY, O.

[Read at the Farmers' Institute Held at Ghent, Summit County, January 27 and 28, 1904.]

In the preparation of this paper no attempt is made by reasoning broadly and deeply to lay down any ironclad rules or scientific principles for the growing of potatoes. The purpose is to state simply, but fully, what I attempted to accomplish in the way of potato growing, the means employed, the results obtained, the observations made and the conclusions reached, all without the least thought of being called upon to report the same.

The problem I attempted to solve the past season was this: Is it possible to increase the number of hills from five thousand to ten thousand to the acre, and have the yield of marketable potatoes in somewhat the same ratio with the increased number of hills, and at the same time decrease the amount of labor per bushel in about the same ratio?

I had been in the habit for years of rowing my potatoes about three feet each way, thus getting about five thousand hills to the acre, and a yield of one hundred to one hundred and twenty-five bushels per acre. They were cultivated never less than three times each way, and at harvest time we always found more or less weeds and grass to contend with.

As to choice of ground, it was Hobson's. The only field for the purpose of the experiment was three and one-half acres of tough timothy sod, it having cut its second crop of grass the previous season. The soil is gravel. Upon this I commenced drawing manure about the middle of December, spreading it from the sled or wagon as it was drawn to the field. I drew from time to time, finishing some time in March, having put upon the three and one-half acres ninety-three loads of barnyard manure of more than average quality. About one-half of the field was plowed in March and the other half the fore part of April. It was not plowed as deep as usual, as I wanted to be certain at the next plowing to be able to throw to the surface all the fertilizer put under at this time. Nothing further was done in the way of fitting until a few days before planting.

It was then worked over three times with a spring-tooth harrow and twice with a float.

As near as possible, I divided the seed into three assortments—those too small to be cut, those to be cut into two or four pieces, those to be cut to one eye. Those that were cut into two or four pieces were cut lengthwise through the seed end. The large ones were cut to one eye, the effort being to have each piece taper to the center of the potato, believing that the germ extends from the surface to the center and if so by thus cutting I would get a stronger plant than by cutting otherwise. Of each variety I rejected all that lacked in any marked degree the chief characteristics of that variety. One-half of the field was planted about April 20 to the early varieties—Beauty of Hebron and Potentate, with the exception of six rows of Carman. The rows were furrowed out with a marker, the legs of which were cultivator shovels, thus marking and furrowing at the same time. The dropping was done by hand with the effort to have the seed about eighteen inches apart in rows two and one-half feet apart. They were covered with a hill cultivator, removing the center shovel and walking the horse in the furrow. This ridged them up well, thus giving the weeder an opportunity to do good work at the beginning. Good work from the first is the chief requisite for a good crop with the minimum amount of labor. Not only is good work from the start a great economizer of labor, but a lack of it is something very difficult to atone for by any kind or amount of subsequent work. I sought to so plant that the potatoes would not be more than three inches deep after the ground had been leveled with the weeder, for in shallow planting we get a more vigorous and stocky vine than in deep planting. All vegetation that has too much of a struggle to come to the light is weak. Common observation teaches this.

The remaining half of the field was planted the first week in May, and for this I used a two-horse planter, setting it to drop the seed fifteen and one-half inches apart and three inches deep in rows two feet nine inches apart.

Before the sprouts were more than an inch long, I went lengthwise of the rows with the weeder and then in a few days crossed them, weighting the weeder so that it would work about down to the growing vine. The next culture was a repetition of this just as the plants began to crack the ground here and there. The field was now well leveled and well pulverized to the depth of two and one-half inches and free from any grass or weeds. As soon as the rows could be followed I turned the shovels of the hill cultivator to throw the ground to the rows, widening it so that by going once in a row, I could throw up a ridge covering the potatoes completely from view. My object in doing this was to protect the tender shoots from the ravages of the bugs, to smother out all weeds and grass that had started among the vines and to furnish fine earth to settle in around the tender shoots.

Now, when the tops had pushed up through this ridge about an inch, I applied the weeder lengthwise and crosswise, weighting it to work almost as deep as the potatoes were planted. This was repeated in about a week. Had it rained sooner than this, I should have used the weeder as soon as the ground had become dry enough, as my theory is to stir the ground after each shower, no matter how often. This last working left the ground well leveled for the cultivator which was used on them again in about a week, narrowed so as to throw the earth well up to the vines.

Aftur this at intervals of a few days they were run over as before with the weeder, it never requiring more than two hours to work them one way. When I crossed them for the last time with the weeder the tops were about two-thirds grown. Not a weed or a blade of grass, however small, could be found in the field, from the first working. and at all times the ground to the depth of two and one-half inches looked as though it had been worked with a garden rake. It required some courage to use the weeder after the vines were large, for each time over the vines were so flattened and tangled, it seemed as though they never would straighten, but in twenty-four hours they stood as erect as before.

After the last working with the weeder, the field was not touched until just before the tops began to lop over, when the hill cultivator with simply the hind shovel left on was put through them once in a row.

I was obliged to paris-green the vines twice, once when they were about half grown, and again after about two weeks.

I think the total work up to the time I laid the field aside consumed not much more than half the time per acre that it did when I rowed them both ways and made no use of the weeder, and the ground the season through was in much better condition—almost a total absence of weeds or grass at harvest time to contend with.

The potatoes were dug by hand, the men using forks, each man crating from forty bushels to fifty bushels of assorted potatoes per day. I found men could not dig as many bushels per day as they could checked ones yielding much less per acre. But, nevertheless, I solved the problem stated at the beginning so far as yield per acre was concerned, and more than solved it so far as the amount of labor per bushel was involved, for, as I doubled the yield per acre, and decreased the labor per acre in a two-fold ratio, I decreased the labor per bushel in a four-fold ratio, more than meeting each and every condition involved in the problem.

The crop was remarkably uniform, very few small potatoes and not over two bushels of overgrown ones, but on the high knolls the grubs ate them badly.

The use I made of the weeder was the one great factor in reducing the labor. The manure and condition of the ground because of the use of the weeder were the two great factors in the increased yield.

The field contained nine-three rows—fifteen of Beauty of Hebron, twenty of Potentate, six of Burpee's Early, two of Maule's Early and twenty-five each of Carman and Rural New Yorkers. The first planting, April 20, consisted of the earlier varieties and six rows of Carman. These all ripened naturally, but the May planting blighted, the tops dying at least two weeks too soon. The Beauty of Hebron were the best yielders, Maule's Early the poorest. I noticed but little if any difference in the yield of the other varieties. The Potentates produced the least ratio of small potatoes, and the Burpee's Early the greatest. Each variety was remarkably true to its characteristics.

I noticed no difference at any time in vigor of the vines of the seed cut to one eye, and those halved or quartered. But the uncut small seed were the first to push the sprouts to the surface and the vines were the most vigorous the season through, and yielded better of marketable potatoes than the same variety of cut seed. On an average the uncut seed had the fewest stalks to the hill, many hills having but a single stalk and rarely more than three. Of the fifteen rows of Beauty of Hebron, eight were fertilized in the hill at the rate of about two hundred pounds to the acre. These made a more vigorous growth for a few weeks, but after that I noticed nothing in their favor, not even at digging time.

Since commencing this paper I have seen a reliable statement that the yield of the United States rarely passes the one hundred bushels per acre mark, and quite often drops to eighty bushels and that Germany with three times the acreage rarely drops below an average of two hundred bushels per acre. Should not this arouse us as to the possibilities of potato growing? Yes, more, should it not suggest to all the desirability of lessening the cost of production of farm products? Farmers, this problem is before us. Each must work out its solution for himself. Wisely or unwisely, skillfully or unskillfully, it is a matter of personal salvation. It is not the problem of more land. It is the problem of better land and better farming. This is no new problem. It is as old as the problem of human existence, but never has it faced the industrial world as in the last quarter century.

SOME OF OUR MISTAKES.

BY J. MASON PRUGH, DAYTON, O., R. R. NO. 2.

[Read at the Farmers' Institute Held at Centerville, Montgomery County, February 26 and 27, 1904.]

In presenting this subject, it is my purpose to endeavor to bring to our attention some of the mistakes that we as farmers have made, with the hope and desire in mind that we may profit thereby, so that if we have made mistakes and are still laboring under them, we may strive to make corrections. If they are a matter of the past with us, a reminder with reference to them will but tend to keep us from repeating the unprofitable experiences. And, again, a discussion of our errors and shortcomings, or mistakes if you please, may sound a note of warning to some young men today who may be just starting out in their agricultural career and as experience is often an expensive teacher we may save them this costly experiment if they will but profit by the experiences of those who have come along this thorny pathway. That mortal man is subject to mistakes none of us will question. It is a part of his makeup. It belongs to the curse that was pronounced upon him in the Garden of Eden in consequence of his fall. God said to Adam, "Cursed is the ground for thy sake, in sorrow shalt thou eat of it all the days of thy life," and a great part of the sorrow that comes to us in this life is a result of the mistakes that we make. All men in all professions and callings of life have the disagreeable experiences which arise from their mistakes, but today I will deal only with those of the farmer.

At the outset I would say I believe many men who are on the farm today have mistaken their calling. Many are farming who would better be doing something else. There have been and are misfits in other occupations and so are there in the calling of agriculture. In setting out upon life's voyage one should be very, very careful to select the business or calling for which he is best suited. This is a matter of the utmost importance and demands the greatest care in decision. I do not think for a moment that every farmer's boy should remain upon the farm. God has planned it otherwise. Young men of the country with inclinations and tastes for city life in the professions, in business or in the workshop, when fully persuaded with reference to the matter, should no longer be expected to remain upon the farm. The city needs some of these strong, self-reliant, sturdy and resourceful young men, such as we largely find in the country. I believe that for the good of our municipalities and great business centers—yes, for our country, state and national government—we should be willing to encourage some of our young men to enter city life. Our educational institutions are not slow to tell us that the most of their brightest and best students are from the country. In city life and affairs the influence that tells for good government and correct living and that is recognized as the moral sinew of the city is in a very large degree wrapped up in the citizen who had his birthplace on the farm. Hence observe the mistake of trying to keep all our boys on the farm.

On the other hand, I would suggest that we often make the mistake of not offering to our boys the inducements and encouragements that we should in order to keep them on the farm. Their environment largely tends to discourage them, for they are bound to be influenced favorably or unfavorably by their surroundings. The discouraged farmer's boy very often has a father who scarcely ever speaks of his business in any other way than in a very disparaging one. He says there is nothing in farming but hard work from morning until night, and frequently he runs the day well into the night and shuts the night off short the next morning and the boy is expected to be right along with him all the time and hear his chronic complaint, "Farming don't pay." He probably tells him, too, that town people do not have to work so hard and that theirs is an easy task in comparison with the farmer's. The surroundings on the farm are anything but inviting—fences dilapidated and corners grown up with weeds and briers, buildings badly out of repair, scarcity of improved farm machinery to assist in lessening the laborious work, no systematic arrangement upon the farm whatever. And so it goes on from day to day, days growing into weeks, and weeks into years, and the boy has to see and hear it all. Do you blame that boy for getting away or wanting to leave the farm? I do not. Had that father rather been up-to-date with his farm in sightly conditions, so managed as to make his operations fairly profitable, and had he delighted to confer and counsel with his boy about matters and things on the farm and together with him gone to the farmers' institute at home and elsewhere, to the county fair and state fair if possible, given him a day off now and then and let him realize that farm life does not need to be a life of drudgery; had he encouraged him to acquire a good liberal education which he would certainly very much need [illegible] make his farm life a success, and offered to him, also, an attractive home life, unless the Almighty had ruled it otherwise, think you that boy would become dissatisfied and leave for the city? I tell you, no.

Another mistake we often make is in our failure to study our soil as much as we should in order to know its adaptability, its needs, etc. We speak of our farm lands in this limestone section as being adapted to what we term general farming. This is true in a general sense, but oftentimes in the same section of land we find a part adapted more especially to the growth and development of a certain crop and a second part to another crop. Oftentimes a special crop (that is, one out of the ordinary) can be grown to particular advantage and profit. Some lands are more adapted naturally to the growing of wheat, some to corn, other parts especially favored for tobacco, beets, onions, alfalfa, potatoes, etc. What has been realized on some of these special crops in certain places where soil and climatic conditions are favorable is simply amazing.

The needs of the soil are often most carelessly overlooked or neglected by the farmer. We go on in our farm management from year to year, observing a marked difference in returns from different parts of our farms, but we do not give much attention to the cause of the difficulty and make little or no attempt to correct it. In many instances tile drainage would solve the problem. Soil heavy and wet and which promises failure when sown to wheat and a very uncertain yield when planted to corn is, after a system of tile drainage has been put in, transformed into a condition which makes it capable of producing a large yield of wheat, perhaps larger than any other part of the farm, and the most certain part of the farm for a large corn yield either in a dry or wet season.

Another great mistake we too often make is in our carelessness with regard to the matter of increasing and maintaining the fertility of our farms. We are often reminded of the fact that our farms are our bank accounts. If we continually make drafts thereupon without making adequate returns the time will come when our drafts will not be honored. It is simply this, we can not hope to continue to draw upon our farms and expect a profitable return without giving something back in exchange. This is certainly conceded by all careful thinking and intelligent agriculturists and practically demonstrated to the satisfaction of all who have given the matter any considerable attention. This mistake has wrought havoc and ruin to many communities. Our farms are no longer as they were in their virgin state when they seemed to be inexhaustible, scarcely any limit to the fertility, yet we find some men going on very much as they did then, cropping, cropping, taking everything off and putting almost nothing back. Fellow farmers, this matter of soil improvement is a proposition we have to meet, the solution of which is of permanent importance to us. Many ways of increasing and maintaining the fertility are suggested. The question is which is the most practical and effective. The chemist informs us that the elements in the soil necessary for plant growth and development are oxygen, hydrogen, nitrogen, carbon, potassium, calcium, magnesium, sulphur and iron. It is stated that an acre of fairly rich land to the depth of one foot contains twenty thousand pounds of nitrogen, six thousand pounds of phosphoric acid, twelve thousand pounds of potash. These are the three elements that we are to be most concerned about. It is said furthermore that there are enough of these three elements in an acre to produce thirty bushels of wheat each year for a period of three hundred years provided they can be made available. Thus we see, it is not only the existence of these elements, but the making of them available as well, that enters into the problem. If statements of scientific men who have made experiments and analyses of the soil be correct, and we accept them as correct, we are led to see that much of our farm land which we speak of as wornout has great stores of fertility locked up within it and it is our province to go after it and make the same available.

Right here is where we often fail. We make the mistake of not inquiring carefully into the difficulty. Something is often lacking in the soil and this lack keeps the other elements from becoming active or available. We have often observed in plowing a field a very marked difference in the appearance of the soil. A part may be very loose, porous and lively and usually when in such condition is very productive. Another part, perhaps, is heavy and cold, very different in its texture from the first part. The thing, perhaps, most needed in this soil is friability which is provided partially at least by what is called humus. This humus we obtain through plowing under green crops, straw, fodder, manure, etc.

The question naturally comes to us, What course will we pursue? What specific is afforded? First, I would say the legumes come right in here and go a long way toward solving the problem. By legumes I mean those plants which contain legumin, which is a compound made up largely of nitrogen, a most needed and expensive element in plant food. The legume family is a large one, claiming as many as seven thousand specimens, according to some authorities, but the legumes we have to deal with are the clovers and beans, such as red clover, alfalfa, soy beans, etc. These in some form or another are indispensable upon the successful farm. At a moment's thought we see that in these legumes we get a two-fold value. We get the benefit of the plant upon the soil in consequence of its top if plowed under, thus furnishing humus and through its deep penetrating root, going down far into the soil, bringing to the surface and depositing there much plant food to be utilized by succeeding crops. Immediately after the growth of one of these crops the soil is left in a more fertile condition. The roots also have a loosening effect upon the soil.

Then, again, the legumes may be fed upon the farm and a most valuable feed they are, being rich in the proteids, the very thing we must have to develop bone and muscle properly, and which costs us so much in the mill feeds we buy in the way of bran and middlings, and what a wonderful return of these elements to the soil through the manures hauled back.

Right here, let me say, that I believe a very fatal mistake many farmers are making today and this applies to our own community with especial emphasis, especially to those with fairly large farms, is in not keeping more live stock. Many of the live stock lines bring the market price for the grain, and more in many instances, when marketed in the fattened animal or through the dairy product or improved breeding stock. A productive farm can be kept productive much more easily and economically than an unproductive farm can be made productive.

Another mistake I believe we are growing to be guilty of is in reasoning that we can purchase our manure in the form of commercial fertilizer cheaper than we can make it. I have heard this offered and believe it to be a most dangerous and unprofitable teaching. Do not understand me to argue against the use of commercial fertilizers, but to say we should use them simply in a supplemental way. Give first place to the legumes and the barnyard manure. If we can feed our live stock upon the farm at a profit we have the manure left as a very valuable byproduct if we will only care for and apply it properly, but how little value many of us seem to place upon it judging from its waste ful use, and the little effort made to make, save and apply it. The gardeners about our cities should be examples for us. How they throng to the cities and haul it out wagon load after wagon load. Then, too, just go down east and see how it is shipped out of those large cities in carload lots and sold to the eastern farmer. And, again, look across the water to some of our foreign neighbor nations, prominent among them Germany, and observe the value they place upon barnyard manure.

This perhaps accounts in part for the success of the German farmer in this country. How often we hear people speak of the prosperous, successful Pennsylvania-German farmers and when they are obtainable how landlords seek them for tenants.

Another mistake that we are making, I believe, is in our indiscriminate purchase of commercial fertilizers. I fear we are not careful enough in what we select as to brand, effect upon the soil, etc. It seems to be a matter of price with us more than quality of goods. I frankly confess that at this point we as farmers are in deep water and I for one am willing to admit that I am groping in the darkness and hoping for light upon this important subject. Some of our leading agricultural writers, and farmers as well, tell us to use the acid goods and count on getting the nitrogen which is expensive to buy through the use of clover. Others say don't use the acid goods; buy nothing but animal fertilizers even if they do cost twice the money; they will prove the cheaper in the end. Which shall we use? is the question. Director C. E. Thorne of the Ohio Experiment Station sounded a note of warning, possibly, against the use of the acid goods. No doubt many of you saw his recent article in the Ohio Farmer. I saw Professor Thorne at the state fair last fall and then he told me the same thing. It was an eye opener. He said complaints were coming from many sections to the effect that they were finding difficulty in getting clover to catch and much irregularity in the stand was noticeable. And they also on the experiment farm were finding trouble of the same kind. A careful investigation revealed the fact that there was an excess of acid in the soil which operated against the clover, hence the irregular stand. If this be true, what is the logical conclusion? Is it not this: That the more of the acid we put into our soil the more difficulty of this character we are likely to experience? On the experiment farm it was only after a very heavy sowing of lime that the effect of this acid was counteracted and clover made to thrive.

I believe we will all agree that successful clover growth and development is at the basis of all successful farm operations and that nothing should be done to interfere with its success. I am beginning to believe that we had better use a high grade animal fertilizer, pay the price for it and use less to the acre. Again I would urge give the clovers and barnyard manure first place and use commercial fertilizers only in a supplementary way. On my own farm I use it only in growing the wheat crop.

Lack of time prevents more than hinting at some of our other mistakes, such as carelessness in the selection of seeds; carelessness in the preparation of the soil for reception of seeds; in the arrangement of farm buildings and appliances for convenience as well as appearance; in failure to take advantage of the offer of improved farm machinery as it comes to us in this the marvelously inventive period in the world's history, and, on the other hand, in not being careful with reference to the purchase of farm equipment instead of spending a fairly good income each year in the indiscriminate acquisition of farm machinery very much of which is useless or at least not needed.

Then, again, the mistake in many instances of not arranging the farm routine so as to give us profitable employment twelve months in the year, instead of about nine and then hibernating for the other three months. This was quite the plan with our forefathers, but it will not do in our day and generation if we would succeed. What other line of business will let a man loaf one-fourth of the time and escape bankruptcy? As long as you can only give your help employment nine months out of the twelve you may expect to experience difficulty in getting men, at least good men. Good men are after steady employment and as a rule get it.

I feel that I should not close this paper without urging a continuance of our interest in the farmers' institute work. Sometimes we make the mistake of being a little careless about making an effort to get to all sessions or to as many as possible. We should arrange for it and be on hand to get its helpful stimulus.

BEAUTIFYING THE FARM.

BY LYDA F. LANTZ, LLOYDSVILLE, O.

[Read at the Farmers' Institute Held at Lloydsville, Belmont County, December 7 and 8, 1903.]

The farm is usually a homestead and anything done to add to its beauty adds to the atractiveness of the home and the happiness of those in it. People are greatly influenced by their surroundings, even though they may not always be conscious of the fact. Beauty appeals to the good in human nature. Other things being equal, people who dwell in the midst of beautiful surroundings are the best and happiest, because the most contented. Nature is always beautiful, which proves that the love of the beautiful is right and should be cultivated. Our wonder and pity are excited to see how greatly it is neglected. We know of nothing else that would add so much to the contentment of those whose homes are on the farm, nothing else that would do so much to deepen the love for the farm itself.

The artist sees a beautiful statue imprisoned in the rough block of marble, and proceeds with mallet and chisel to set it free. If only more people had a vision of the beauty hidden on their farms, enthusiasm would be aroused and a transformation begun. If people only realized the large returns in satisfaction and increased value that await a little work and good judgment, there would soon be great emulation in the attempt to have the neatest and prettiest place, just as is there is emulation among good housekeepers to have the cleanest, best kept house. The word tidy is imprinted upon the housekeeper's mind at a very early age and the impression is never allowed to grow dim. But a tidy farmer! How strange the combination sounds! We did once hear a farmer spoken of as being neat. On remarking about the improved appearance of building and surroundings, since this man had taken charge of them, the answer was, "Yes, John is a neat farmer."

The sculptor simply removes the rough outside from the object he sees in imagination. A similar process is needed on the farm. If all the rubbish that mars field and premises were removed and everything out of place were put in place, the result would be as gratifying to the beholder as it would be profitable to the owner.

It goes without saying that the clean, neat, well improved farm finds a ready buyer and brings the highest price. Once a man embellishes his farm, he is not slow to understand the worth of the improvement, and it takes a good round sum to induce him to give it up for some other family to enjoy. Not that it costs so much, either in labor or in money, but because of the gratification that comes in the doing and in the possessing.

After all the rubbish and unsightly things have been removed and buildings and fences made neat and trim, the next greatest need is the planting of trees, vines, and shrubs, fruit trees, nut trees, timber trees, about the buildings, along the public road, on bare hillsides and in all the odd corners. It is surprising how many trees can thus be planted to advantage, taking up little or no valuable room, while the enhanced beauty of the farm should be sufficient reward; the trees will, in a few years, yield a good return in fruit, nuts, and timber. Plenty of trees well selected and well arranged make a farm more desirable in these two ways at least, and greatly increase its value.

A certain man once asked a city man in the northern part of the state why he bought a particular farm. "I bought it for those trees," he replied, pointing to the fine trees that made an avenue of the public highway through the farm. It cost but little in labor and probably nothing in money to put those trees there, but it took nature some years to grow them. The man who saw far enough into the future to plant them was both wise and benevolent.

"Give fools their gold and knaves their power,
  Let fortune's bubbles rise and fall,
Who sows a field or trains a flower
  Or plants a tree is more than all.
For he who blesses most is blest,
  And God and man shall have his worth
Who toils to leave as a bequest
  An added beauty to the earth."

People are certainly short sighted when they neglect to plant trees because they cannot have them in their full beauty or usefulness the first or second year. The years will surely pass, but there will never be any pleasant shade, or luscious fruit unless the trees are first planted.

Fruit trees have been developed until they bear very early in life, but they have also become shorter lived, and fruit is less plentiful than years ago when more time was required to produce it. A few trees put out each year will keep up the orchard, make the farm more homelike, and add to the income, as well as to the health and enjoyment of the family.

Vines, like flowers, are intended to beautify the earth, and it seems strange that so few are seen about farmhouses and premises. Unsightly places can be made beautiful or hidden from sight, by being covered or screened with vines, and vines improve many an old house more than a coat of paint. Grape vines are easily grown, attractive in appearance, and furnish an abundance of the choicest fruit. The largest and nicest back yard we know is covered with a grape arbor. When hundreds of clusters of rich fruit are hanging from the top of this arbor, it is a sight to be remembered. The great wonder is that it should be so unusual.

Flowers, for their beauty and fragrance, are loved by every one. No home is complete without their cheerful, refining influence. Hardy plants, rose bushes, and shrubs planted about the house and grounds insure plenty of flowers without much work or expense and gain in beauty every year.

When we go into a strange neighborhood we form our estimate of the people by the appearance of the country. If the farms are neat and well cultivated, and the buildings in good order, we are favorably impressed from the first. The best appointed farm does not always have the finest buildings. Sometimes the last place that the passerby would choose for a home has a house that presents the same appearance on the farm that a silk hat would have on a man following the plow. There may be, also, a barn that might be compared to a broadcloth coat on the same man. The house and the barn are all right, but the surroundings are not in keeping with them. Beauty is always harmonious. It would often seem that people have exhausted their resources or energy by the time the fine house and possibly other buildings are secured, and are unable to bring the surroundings up to the same plane. The place that leaves the most pleasant impression upon the passerby is noticed first for the surroundings, which have been made as beautiful as possible, extending even to he outermost boundary of the farm. The house may be a cottage, neat and cozy, an old fashioned dwelling, large and rambling, or a modern structure complete in every detail, but in any case the harmonious surroundings will contribute the largest element of beauty and attractiveness. The showy and artificial are never beautiful, and never so ugly and out of place, as on the farm. Nature, alone, would make the country beautiful if not interfered with, and man's work should be in harmony with nature.

It would often seem that the farmer is waiting to do some great thing to improve his place and finally for want of opportunity gives it up, when, if he would only do all of the little things, he would wake up to find no need for anything great.

BUTTER MAKING.

BY MRS. P A. KEMERER, R. R. 7, FINDLAY, OHIO.

[Read at the Independent Farmers' Institute, Held at Benton Ridge, Hancock County, January 27 and 28, 1904.]

The making of butter is an ancient art, for we read in the Book of Genesis that when Abraham met the angels on the plains of Mamre he invited them into his tent and set before them butter and honey and the flesh of a calf. The consumption of the product has grown to mammoth proportions, as statistics show that it amounts to more than eighteen pounds per capita per annum. It is so general in its use that it serves to illustrate extremes of conditions, for we say of the very poor, "He is too poor to have butter on his bread," and of our rich neighbor, "He can spread both sides of his bread with butter."

Ancient historians give us some idea of the primitive churn as it was used in the tents of our nomadic ancestors. They put the cream in the skin of an animal which was suspended from the roof of the tent or from three poles placed in the form of a cone and pushed to and fro by two women, one on either side.

Butter making is dependent on several conditions: The cow, her care, feed, the quality of the milk, the gathering of the cream, the process of churning, the working of the butter, before we need to worry ourselves about the marketing. The neglect of some of the essentials named seriously affects the quality and quantity and the market varies according to this deficiency. It is only the strictly first class article that commands and maintains the highest price.

First, as to the cow, any of the milk breeds are good. Guernseys and Jerseys are considered the ideals for butter, but at our home we use one of the beef breds with just enough Jerseys to give color to the butter, for we make it a point to grow beef as well as to make butter. For the making of the perfect article the score of 100 points reads as follows: flavor 40, grain 30, salt 10, color 15, packing 5.

Now as to care and feeding: I have in my library an article written by Professor E. W. Allen, Ph. D., Assistant Director of the office of Experiment Stations of the United States Department of Agriculture. He says, in speaking of the care and feeding of cows that at the Kansas experiment station a herd of twenty scrub cows which were below the average in the state were tested to see what could be made of them by proper care and feeding. The average annual yield of milk per cow under such conditions was five thousand seven hundred and seven pounds, the poorest cow giving three thousand five hundred and eighty-three pounds, and the average yield of butter-fat two hundred and thirty-eight pounds, the poorest cow giving one hundred and thirty-five pounds. The value of the butter-fat averaged thirty-seven dollars and fifty cents per cow. To compare these figures with the conditions in the state the records were collected of eighty-two herds in one of the leading dairy sections, and the average annual yield was found to be three thousand four hundred and forty-one pounds or two thousand two hundred and sixty-six pounds less than the scrub herd and one hundred and four pounds of butter-fat valued at nineteen dollars and seventy-nine cents, a difference of seventeen dollars and seventy-one cents in favor of the scrub herd.

The greater yield from the scrub herd was due to three causes; first, at all times their rations were balanced or contained an excess of the material which builds blood and milk called protein, while the Kansas cow usually when on dry feed has only half enough protein. Second, kindness and shelter—the scrub cows were petted and comfortably sheltered, they were never driven faster than a slow walk, and never spoken to in an unkind tone. Third, a full milk yield was secured through the summer drought by giving extra feed. No better illustration can be given of care, kindness and intelligent feeding.

These results teach their lesson and while very few farmers can comply with the requirements, there may be as near an approach thereto as possible.

The balanced ration is one of the essentials in the feeding of our dairy animals, and one of the necessities to accomplish this is the silo, but as we lack this we confess that we are feeding at a great disadvantage, it being a problem whether the cost of a silo and the necessary machinery to fill it would be offset by the increased production from a small herd of cows. We have learned of one thing that costs so little, it is worth while to give the cows their full rations at all times, and that is kindness. Every time a cow is ill treated she is sure to retaliate at the milk-pail and no cow will give her full quantity if hooted at or worried by mischievous colts or vicious dogs.

We now come to the milk and its care: Milk at regular hours if possible; the yield will be greater. We use a gravity separator kept cool by water running into and emptying in the stock tank outside; during cold weather it is essential that the milk be kept from freezing, for if it freezes the cream will not rise well and the butter will be deficient in flavor. After about eight or nine hours the milk is drawn off and fed to pigs and calves, the cream is drawn off in cans and placed in a galvanized trough of running water; when enough has been gathered it is ripened and churned. During the ripening process it should be stirred occasionally so as to make it more uniform. No particular churn is recommended. Some prefer one without dasher, but we use a churn hung on rockers and like it very well, as it seems to run easier than any other.

By testing the cream with a floating thermometer it can be raised to the desired temperature of about fifty-eight degrees to sixty degrees in summer and sixty-two degrees to sixty-three degrees in winter, when the butter ought to come quickly, but when the cows are well along in lactation it takes much longer for churning. When the butter has gathered the buttermilk is drawn off. Careful judgment must be used in the process at this point in order to make a first class article. In winter the temperature of the water to be added must be raised a little so as not to injure the grain during the washing of it. The butter is now removed from the churn to a bowl and salted, about one ounce to the pound being the standard. The buttermilk is now removed as completely as may be by thoroughly working it with a wooden ladel. Let patience and perseverance do her work perfectly, for any neglect is sure to result in a butter that is deficient in flavor and keeping qualities. After it is worked smooth and even it is packed in jars in quantities to suit customers, the butter being covered with oiled paper which makes it more attractive.

Some years since I received fourteen cents per pound for my butter and thought I was doing well, but on listening to a lecture given by one of our state speakers at this institute there was an ambition stirred to obtain a higher price, and through the influence of a friend I received one customer; since that time I have not wanted for customers; they furnish me a market for all that I can produce at a uniform price the year round. The marketing is done once a week, the filled jar changed for an empty one.

At all times it is essential that cleanliness be observed. The buckets, separator, churn and every vessel used in connection with the milk or cream should be thoroughly clean. I use no soap, as there is something very much better. I have found by experience that sal-soda is to be preferred before any soap. It has better cleansing properties, is a better disinfectant, a more complete germicide, is purer and cheaper than soap or any commercial washing compound I have ever used.

In conclusion, allow me to say that if I have given inspiration to any tired and discouraged butter maker, or helped any one to a broader view of the art of butter making, the time spent in its preparation will have been well employed and I shall feel well repaid. Let us strive to produce butter sweet, wholesome, golden, fine-flavored and firm in texture, fit for the table of not only the king, but the farmer, who is surely the sovereign of his own domain.

CARE AND MANAGEMENT OF POULTRY.

BY MRS. S. R. SMILEY, SPRINGDALE, OHIO.

[Read at the Farmers' Institute, Held at Blueash, Hamilton County, January 22 and 23, 1904.]

Having devoted almost twenty-five years to the culture and management of poultry, studying the art in its many different phases, depressed by the failures, and elated by the successes in their different forms, being possessed of an indomitable will, and determination to succeed, in as far as it was possible so to do, I trust I may have gained a few points of knowledge which I hope may be of interest and assistance to some sister farmer's wife just entering the arena of poultrydom.

It is now the time of year to be thinking and planning for the coming season. Having our matings nicely planned we should think over our last year's experience, and see where we made mistakes, and think out any problem that perplexed us now, while we have plenty of time, that we may know when summer comes what to avoid in the line of stumbling blocks. Now is a good time to build coops, and other contrivances for the comfort of the chicks, and there is a satisfaction in knowing that everything is ready. If these things are left until the busy season is upon us we are so hurried that we do not give them the attention which they require and our business does not go along as smoothly as it should. When the chickens begin to hatch there is business enough on hand, even if all the work that can be done ahead is done, and a definite, well formed plan of action is a great factor towards success in any undertaking, and as success is what we are all working for, we want our business well in hand.

My experience has taught me that in order to obtain the best eggs for hatching it is necessary to construct a park or breeding pen of six-foot woven wire—about twenty feet by fifty feet makes a very satisfactory pen—the cost of which is insignificant compared with the beneficial results obtained. Then stock it with a trio, or more, a dozen if desired, of standard bred fowls, of the breed that strikes the fancy most, in order to elicit the deepest interest throughout the breeding season. I usually stock my pen with about fifteen first-class two-year-old hens, and one strong, vigorous cockbird of high merit. As for myself, I prefer and raise the single comb brown Leghorns, the veritable egg machines, and have found them more profitable than any of the other breeds that I have tried. But that is immaterial, choose the breed you most admire, but do be sure of one thing, and that is, that it is pure-bred stock. It is much better to procure a few good fowls than a large number of medium quality. More real good chickens will be obtained from a single pair or trio of well mated, high-class fowls, than from a large flock of medium quality. It pays to buy good stock, just as good as one can afford to buy. The cheapest pure-bred stock that can be bought is superior to mongrel stock, but it is advisable to buy something better, if possible. How easy it would be to rid this country of mongrel stock if farmers would just produce a pen of pure-bred fowls, and house them by themselves, and set only the eggs from this pen. In a single season they should raise enough pure-bred chickens so that they could dispose of all their mongrel stock.

I usually filled my breeding pen about two weeks previous to the time of setting, provided the fowls with nice clean nests of straw or hay, dropped a porcelain nest egg in each nest, and tacked a curtain of some course heavy material to fall over and close the entrance to the nest, as Biddy naturally seeks to hide her egg away. This drapery idea may be new to some of you, but it is an actual fact that if two nest boxes be sitting side by side, one having the fall of drapery, the other not, nine times in ten you will find the eggs all deposited in the concealed nest to the neglect of the other. This also serves as a preventive of egg eating among the hens.

My poultry yard being an apple orchard, the limbs and bodies of the trees form an excellent support for the nest boxes for the use of the farm flock, which roams at large. I never allow my hens to lay in the poultry house, much less to sit there, as that is one of the best means of propagating vermin, which is one of the greatest drawbacks to poultry success. My nest boxes are simply small store boxes, with the front enclosed, leaving an entrance large enough to admit the hen, having a curtain tacked over the door, and containing a nice clean nest of straw or hay, and a porcelain nest egg. I tack two or three of those boxes in each apple tree, and never have any trouble with my hens stealing their nests away in the grass, as they seem to enjoy the elevated ones, and during the laying season, in the spring and summer that plat of ground is a merry, noisy place, with one hundred or more hens singing and cackling at the top of their voices, each one proclaiming her own great work, as well as that of her sister, while the male portion add their bass stanzas, with the proper time and in harmony.

But let us return to the breeding pen. Pure clean water must constantly stand accessible to the fowls, and grit in some form must be added to their daily ration. I gather the eggs every evening, keeping separate those from the breeding pen, handling them with care, until the time arrives for incubation. When on my egg collecting rounds should I find a hen remaining on the nest inclined to be broody, she is promptly removed unless it is desirable for her to begin sitting and placed in a slatted or wired pen and kept in confinement for two or three days. In a week or two she will be on duty again helping to fill the egg basket. A mistake too frequently made by poultry managers is that of allowing the broody hens to remain on the nest day after day, probably two or three crowding into one nest, and thus handicapping the work of the active members of the flock, causing them to seek nests elsewhere, or, through discouragement at the loss of their regular depository, cease laying entirely; thus the egg production is reduced to a minimum unnecessarily.

I use the good old mother hen for the purpose of hatching the little chicks. I do not set my hens in any old place, to be annoyed by the layers, but each one by herself. I will try and describe an arrangement I made for that purpose, which I think fills the bill to perfection. Make a bottomless box, six feet long, four feet wide, and fifteen inches high, divide it through the middle lengthwise and partition off for nests on one of the sides, then place partitions across the remainder of box, each partition leading from the edge of each nest to the farther side of box, forming an alley or runway, where each hen can come out at her pleasure, unmolested by any other, for refreshments. Drive a nail in the side, near the top, and hang on it an ear of corn, by looping a twine string around it, and place another nail in the corner and suspend upon it a tin can for the purpose of providing water; provide these in each alley. Then cover the tops of the nests by sawing a wide board into sections to fit each nest, hinge to a strip on top with pieces of leather and carpet tacks, finish top covering with strips of boards or woven wire, hinging a board in two sections on top at opposite side from nests, in order to put in feed and water. Line your nests nicely with hay or straw, mark date on eggs and bring a broody hen, after dusk, from anywhere, place her on carefully, without exciting her, close the top, and if that hen means business, you can guarantee yourself from ten to fifteen downy chicks, three weeks hence, without any annoyance or trouble, more than to note occasionally if she is provided with feed and water. Provide yourself with as many of these hatchers, (or incubators I call them) as your requirements demand. I use three, containing five or six nests each. They are portable and can be moved to any convenient spot, and I consider them one of the most useful adjuncts to the poultry yard. When the chicks begin to appear, allow them to remain undisturbed in the nest for twenty-four hours. then remove them with the mother hen to a roomy dry coop, water and feed regularly from three to five times a day. For the first few days let the food consist of bread crumbs, millet, oatmeal, and later wheat and cracked corn until they can eat whole corn.

In order to be sure that you can identify the chicks when matured, as to their age or year they were hatched it is necessary to place some permanent mark on them while very young, usually when taking them from the nest is a good time. For this purpose I use a neat little spring punch with which I punch a hole in the web between the toes, punching the same web of each chick each year. This can be done when the chicks are just hatched, and the mark will remain during the life of the fowl.

When the chicks are from three to five weeks old, if they have grown well, and before the hen weans them, I change their roosting place from the coop to a roosting room in the poultry house nearby by moving the coop a foot or so nearer the poultry house each day, allowing them to roost in the coop each night, until it has reached the door; then about dusk put them in their new quarters, remove the coop and they will invariably go to roost thereafter in the building. I have a room partitioned off especially for the year's production of young fowls.

I do not allow my farm flock of hens to roost in trees, or on fences, or about the stable or buildings, but march each one with strict discipline into a well-ventilated poultry house. My roosts are level and about fifteen inches from the floor.

When you have brought your birds to a high degree of development and a good share of your hatches are good specimens worthy to send away, then advertise in one or two reliable poultry journals and await results. You will be very agreeably astonished at the correspondence, money orders and bank notes you will receive. Also in season advertise your eggs for hatching and see how interesting it is to exchange a setting of eggs for a dollar bill, and simply because your fowls are pure bred and not mongrels. It does not cost one cent more to raise pure bred stock than it does to raise mixed breeds, and I can attest by my own actual experience that the profits are much greater in favor of the pure bred. Besides, their plumage will all be of a feather, and you will have a flock that will attract the attention and excite the admiration of every one who beholds them, and you will look upon them with a greater degree of pride yourself. In conclusion, I do not hesitate to say that poultry keeping, according to the amount of capital and labor involved, is beyond question the most profitable branch of agriculture.

POULTRY ON THE FARM.

BY MRS. WILL JOHNSON, M'CONNELLSVILLE, OHIO.

[Read at the Farmers' Institute Held at Malta, Morgan County, December 16 and 17, 1904.]

Like a great many other people, we bought the farm that was to be our home and went into debt for it, and as the proper thing at that time seemed to be to grow wool, we stocked the farm with sheep, buying them at a time when sheep were in demand and commanded large prices, but in a very few years the prices fell; in fact, I think they reached the bottom (the time I speak of was about ten years ago). Wool was worth only about fifteen cents or sixteen cents per pound, and of course there was no money in sheep for us.

The future began to look pretty discouraging, especially as our farm was heavily mortgaged. We had a growing family to support, interest to pay, taxes to pay and other expenses to meet. I proposed to the head of the house that we go into the poultry business a little more extensively. We had then about one hundred and fifty hens and I felt competent to care for as many more with success, but he was not much in favor of it. He did not think there was much money in chickens, besides they might take the cholera and die, and he felt that we could not afford to make the venture, as it might be a losing one. In order to convince him that there was money in chickens I began keeping an account of their expenses and also the income we received from them, and it really seems necessary in order to convince a man that you bring some strong argument to bear upon him or display a row of figures. With a woman it is different; she knows a thing is so just simply because it is so.

Well, in this case the figures were convincing and in a very short time the good man began to take an interest in the poultry which he had not hitherto shown. One point I wish to emphasize right here, and that is the necessity of husband and wife working together in the management and care of their poultry. Feed must be provided, coops made and houses built for their accomodation, and many other things that a woman cannot do. There is no other source of income on the farm that calls for the co-operation of both husband and wife as does the poultry. I have lost the accounts of the first two years we worked together in the poultry business, but I have the accounts for the years of 1895 and 1896 and I shall present them to you today and you may judge for yourself as to whether our venture was a failure or not.

In the year 1895 we had about three hundred and fifty hens to begin with. We set sixty-two dozen of eggs and hatched four hundred and seventy-two chickens. This was, of course, a very poor hatch, but we raised the most of them. We used three hundred dozen of eggs on the table and sold three thousand seven hundred and forty-five dozen at an average of eleven cents per dozen, and one hundred and ninety-seven chickens, dressed, at nine cents per pound; we also sold fifty-two turkeys at seven cents per pound, live weight. You will observe that poultry then did not command the prices it does now, but our proceeds from poultry and eggs that year was five hundred and thirty-four dollars and forty-three cents. The next year we had nearly five hundred hens. We did not attempt to raise as much poultry as the previous year, but we used about the same number of eggs on the table and sold four thousand four hundred and seventy-three dozen of eggs at twelve cents per dozen, and the income that year from our poultry and eggs was five hundred and ninety-four dollars and ninety-seven cents, just five dollars and three cents less than six hundred dollars. We have found by experience that it requires a bushel of grain to keep a Plymouth Rock hen a year, while a Leghorn hen will not require nearly as much. It did not cost us any more to keep our poultry the year of 1896 than it did in 1895 because in 1896 our hens were nearly all Leghorns. I do not wish to leave with you the impression that I favor any particular breed, for all are good, but it is our business to produce eggs and therefore we changed from the Plymouth Rocks to the brown Leghorns. Everything that the fowls consume we raise on the farm except the crushed oyster shells and the cracklings, which we buy at the butcher's when we can get them. We did not have to sell off any of our other stock to make room for the poultry.

Our farm products are corn and wheat; therefore we feed corn and wheat, more corn than wheat in winter and more wheat than corn in summer. In addition to the regular allowance of grain we feed a mash made of cooked turnips, scalded clover leaves and cracklings, mixed with bran or some ground feed. We feed this when the ground is covered with snow or the weather is very cold. We also feed it at noon because noon is the only time we have to prepare it.

Now, I suspect if I can tell you what will keep the cholera away from your flocks, that is what you wish most to hear. The cholera is one of the least of my troubles at the present time, for I believe that every case of cholera or indigestion (you may call it what you please, the results are the same) has a cause. The first thing to do is to find the cause, the next to remove it. The condition of a great many barnyards is such as to furnish a clue to the cause. We do not invite the cholera by allowing pools of stagnant water to stand around in the barnyard. In the spring or any wet spell the rains soak the manure pile and drain off into the low places or wagon tracks and the fowls drink this filthy water and get sick and die. We have an abundance of good running water at our place and I do not know why they should drink this filthy stuff, but I know that they will do it when they can get it, and I also know the consequences. We remove the cause, and now that your attention has been called to it you can do the same, removing the manure pile, or covering it, or filling up the low places; either is effectual. Choose your own plan, but be sure and remove the cause.

Farmers used to have an idea that the fowls ought to hunt their own living in the summer time—"scratch for it." I assure you they will scratch for it if not fed, and it is just as likely to be in your garden or grain fields as anywhere else, but when you stop feeding them a great many of them will die and those that remain will get themselves into mischief and give their owners a great deal of trouble. I have known cases of cholera where a few bushels of grain would have worked an effectual cure, besides filling the egg basket and thereby increasing the profit. It is a loss to underfeed your hens, giving them just enough to keep them alive and not enough to stimulate egg production. Your rate of income on your investment is not very large. Overfeeding is just as disastrous. I had a little experience along that line and I am not anxious to repeat it. We had a nice flock of hens, and also a good quantity of corn. It was in the fall of the year, eggs were worth twenty-five cents per dozen, and I thought that the hens ought to lay when the eggs were bringing good prices, so I fed corn, nothing but corn, and the first thing we knew nearly half of our hens were sick. We did not lose half of them, but we lost enough to convince me that it is folly to try to force the hens to lay at that time of year on corn alone and in overdoses at that.

My plan of feeding the young chickens and turkeys is a little different from yours, I presume, but as they never have the cholera or diarrhoea I shall venture to give it to you today and hope you will judge of its merits by its results. I still hatch and raise them with the hens, although I think that incubators and brooders are all right, perfectly right, for those who have time to operate them, but time is at a premium at our place, and, having a large family to care for, I must necessarily practice economy in time, more perhaps than in anything else. When the chickens are all hatched I remove them with the hen to a coop which is bottomless, but tight enough to keep out the rain. This coop I move to a clean place every day or two to insure them clean, healthy quarters. I grease the chickens' heads to destroy lice. No doubt you all do that. I give them no water to drink. I never place a vessel containing water in a coop, and there I presume you think I am wrong, but I have been practicing this for more than ten years and I never lose my chickens by disease. I feed them bread soaked in milk, sweet skim milk preferred, and mixed not very stiff with wheat bran and a very little corn meal, although I do not believe much in corn meal as a diet for young chickens; the bread absorbs the milk and thus furnishes the necessary amount of moisture to aid digestion and their quarters are clean and dry. When they are three or four weeks old they are old enough to eat grain and they are also old enough to go to the creek and get their own drink. I do not raise them near the creek, however, but on a hill at the back of the house that I think is the best location I have, and it is your privilege to choose the best you have.

I feed the young turkeys just the same mixture as the chickens and raise them with the turkey hens. I usually raise all that hatch. Last year I hatched twenty-eight and raised twenty-four. Those I lost the hawks caught after they were old enough to roam over the fields. If I do not hatch turkeys enough to go with the turkey hens I give them chickens to raise. A turkey hen can easily raise twenty or twenty-five chickens. Two years ago I raised thirty-five chickens with one turkey hen. People often remark that it is an unusual sight to see them running thus, but it is a very common sight on our place. The only difficulty is in getting the chickens to follow the turkey. You have noticed, perhaps, that the turkey hens do not call their young very much. As a turkey hen will not bear confinement in a coop I place mine in the front yard until they get started. They are away from the rest of the flock there and I can watch them. My husband says that I have a turkey hen in the yard about all summer and he is not very far wrong. As soon as I have one flock ready to turn out I have another ready to put in, and I find that I can raise turkeys and flowers at the same time and at about the same place Turkeys do not scratch, but it is their nature to forage for insects.

Poultry is a source of profit, we all believe that; it is a source of pleasure also; at least, I take pleasure in owning and caring for our poultry, and with the children on the farm poultry is a source of education and pleasure also. The very fact that a child owns a pet chicken is uplifting and the sense of ownership develops a tenderness and a responsibility which it is willing and anxious to fulfill. I remember when I was a child I owned a pet goose, and I do not think I shall ever forget it, and I am sure there are some pleasant things connected with our poultry which our children will never forget. One of these pleasures is the hiding of the Easter eggs, a pleasure which occurs every year and never seems to lose its interest. Even our big boys enjoy hiding their eggs, or perhaps they enjoy more keenly hunting for some other person's hidden eggs.

Poultry is not only a source of profit and pleasure, but a great convenience, if not a luxury. We have fresh eggs for the table at all times, and we use now fully four hundred and fifty dozen a year. We have chickens for our birthday and Sunday feasts and whenever occasion requires it. The poultry furnishes the means to buy our groceries, clothe the family, school the children, pay the taxes. It is also an income that is forthcoming every week, as our expenses occur, so we have the means to meet them, and then it is something that we all feel an interest in. We can all help care for the poultry. We feel that these are our chickens, our turkeys, our ducks. Perhaps I ought not to say "our ducks," for the man of the house does not claim any interest in the ducks, but I notice that he likes to sleep on the beds made from their feathers. So I will venture this time to say "our ducks" also.

PRACTICAL POULTRY RAISING ON THE FARM.

BY MRS. R. C. PRUGH, CAMDEN, OHIO.

[Read at the Farmers' Institute Held at Camden, Preble County, January 20 and 21, 1904.]

A great many articles that are written on this subject are more theoretical than practical, the following out of which would consume so much time that that of itself would make them useless to the farmer, as this branch of industry is usually but a side issue on the farm. However, this is a subject of no small moment to the farmers, and the farmers' wives, especially, for they are generally the ones having this department in charge. The annual returns from the poultry and egg industry in the United States, according to the last census, are something over two hundred and eighty million dollars, Ohio standing second in the production of eggs.

I regret that I have kept no specific account of the poultry product the past year and can only speak in a general way. We have never made a specialty of poultry raising with a particular object in view other than to make it a paying investment as a necessary adjunct to the farm, with as little outlay of time as possible, and I shall speak of it from this standpoint.

There is no time of the year that the poultry does not require attention, and so for the sake of having a starting point I will begin with the first of March. If the chickens have been well fed and well housed during the winter months there ought to be enough broody hens that are in earnest to justify preparations toward setting them. Earlier hatched chickens, while they bring a good price, do not pay for the extra trouble and care unless one is especially provided with conveniences for raising them and has access to a good market.

An enclosure in the hen house is made ready by placing boxes partly filled with clean straw around the sides. These boxes are made with slides so the hens can be fastened in. A dust box and one of grit, a drinking vessel and plenty of clover chaff for a carpet, and the furnishing of this temporary home is complete. I make a practice of setting as many at one time as possible, having saved the best eggs through the latter part of February for this purpose.

A hen removed and placed on the nest late in the evening is much more likely to act in a sensible way about the matter than when put on during the day. If handled gently and quietly she soon makes herself at home, but if one concludes not to do so and grows loud in her demonstrations against such proceedings get her out of the way as soon as possible, as the effect upon the rest is demoralizing. Let her return to the old nest until she becomes stronger in the faith, and if she still objects sentence her to a week or two in prison. The second evening let the setting hens off to feed and drink and do not forget to see that they are fastened in again for a night or two and they will soon need no further attention, except to keep plenty of grain and fresh water before them, until the eggs begin hatching, when they should be shut in again to prevent the other hens from trying to take possession. The chicks should be removed soon after hatching and kept in the house for about twenty-four hours. Then dust them well with insect powder, cover them a short time and put them in coops, from twenty to twenty-five in each, with the hens that seem most motherly. The hens should be well dusted also and the coops placed in a sheltered location, protecting them from the north and west winds during the early spring. I have never tried incubators, believing they require too much attention to be practical in connection with the other work on the farm. I used a brooder four years. It was satisfactory in that the chicks remained free from lice and it stood always ready to hover them in cold, damp weather, but I could never feel at ease for thinking of the lamp. It was the first thing to look after in the morning and the last thing at night and was to be filled and cleaned each day. On cold nights the chicks crowded so in the lower run it required extra care to prevent them from smothering, and the brooder itself —like an enlarged bird cage—needed to be overhauled and cleaned at least twice a week. I finally sold it and have gone back to the old-fashioned way, believing that the nearer I follow nature's plans the more successful I shall be.

A good supply of coops is one of the essentials of success. These can be made by the men during a slack time with a small outlay of money, and they should be stacked up and cared for when not in use. Enough coops to accommodate one hatching are placed close together on board floors, with a feeding pen near. When a second installment hatches they are placed some distance from the first, as the younger chicks stand a better chance at feeding time and the old hens will have less opportunity to domineer over the new arrivals.

I feed corn bread for a few days and then cracked corn—and as they grow older, wheat and corn—never wet feed. Chickens of all ages must have plenty of fresh water each day, as pure water is more essential to the health of fowls than any other one thing. Later in the season, when the weather is warmer, the growing flock needs attention in regard to lice, when a little unsalted grease applied on the head of young chickens or on the upper part of the wings of turkeys will prove effectual. Ducks are not troubled with lice or gapes. Their great complaint is getting enough to eat. I have not been able to find a remedy for gapes and lose more from this cause than from anything else.

The coops should be turned over occasionally, especially after continued rains, and the floors cleaned off with a hoe and a broom and left to sun the remainder of the day.

To return to the hatching room, each of the hens is expected to hatch two settings of eggs while the weather remains cool. This would seem to be practicing an imposition on Biddy, but have you never noticed how an old hen will patiently sit all summer, trying to get something out of nothing, and apparently not discouraged in the least? The straw should be renewed with each setting and lime, ashes or coal oil applied to the inside of the boxes to prevent vermin. This hatching room is kept running to its fullest capacity from the first of March until the middle of June. Last year between five and six hundred were hatched in this time. After the middle of June the hen-house is cleaned and closed for the summer.

I have in use the kind of nests that S. H. Todd described at this institute several years ago, and find them most satisfactory. A cement floor is preferable, being warmer and easier cleaned. Clover chaff is kept on the floors and the cleaning is done by the men.

I sell all the young roosters and undesirable pullets as soon as they become of salable size. Early in the spring two settings of eggs are purchased of some good strain of thoroughbred Plymouth Rocks, and when hatched these are marked and kept for breeding purposes. I find this better than buying cockerels in the fall. It is cheaper and they do not have to become accustomed to the place.

The hen-house is reopened the first of October and fresh straw and chaff put in place. A self-feeding box is filled with oyster shells and a dust box provided after the ground becomes frozen or covered with snow. The evening feed is thrown in the building and about the door to familiarize them with their winter quarters. When the weather grows cold there is a grand round-up of the chickens still roosting outside. Those inclined to be wild or not up to the standard are sold. In February or March I sell again, letting everything go except what I wish to keep for the year. The sales the past year amounted to over ninety-five dollars for chickens alone, as nearly as I can calculate.

I feed the year round, feeding oats usually just at evening in summer, and in winter time feeding oats in the morning, an occasional warm mash at noon and wheat or corn at night. If very cold weather, the grain and the drinking water are warmed. As we have no dogs on the farm, the table scraps go to the chickens. Except on very cold days I prefer wheat to corn. Corn-fed chickens do not lay so well and are more inclined to cholera.

My poultry has not been afflicted with cholera for a number of years. I use as a preventive a mixture of corn meal and air-slacked lime in the proportion of one part lime to two parts meal. This is fed dry two or three times a week early in the spring and during the time the grass is springing up. If the chickens do not eat it readily I scatter grain on top of it. I have used very few of the many nostrums sold by agents, preferring to depend on cleanliness and care as preventives against disease.

I have been paying our little girls at the rate of a cent a dozen for gathering eggs, and, as they have kept a book account for ten months, I am able to give the amount gathered during this time, with the exception of twenty-three days which they failed to mark down. The account footed ten hundred and sixty-six dozen. January and December were omitted, the days being too short for the girls to get home from school in time to gather them, but during these two months we get fewer eggs than any other time of the year. I have given little attention to forcing winter laying and in this I make a mistake. Since eggs have taken unto themselves wings it behooves the farmer's wife to study how to stimulate egg production.

I have spoken principally about chickens as they are more generally raised. Those fortunate enough to have turkeys for sale this year realized good prices, and turkey eggs will doubtless be in greater demand than ever next spring.

The pervailing high prices of all kinds of poultry products should encourage farmers to pay more attention to this particular branch of industry — keep a better grade of poultry, correct mistakes and profit by our experience and observation. When it is estimated that the profit is four hundred per cent on the investment, as shown by late statistics, it is worth our best efforts.

A PLEA FOR GEESE.

BY MISS MARGARET STEWART, NORWICH, OHIO.

[Read at the Independent Farmers' Institute Held at Chandlersville, Muskingum County, November 24 and 25, 1903.]

In choosing to raise geese I realize that I have chosen a most unpopular line of work, but in these times there is so much complaint in regard to the labor question and the assertion is so often made that women are not content to stay in their own sphere and earn a little if need be by the use of the needle, but are continually crowding the men from nearly every line of business and occupation. I rejoice that I am in no way guilty of any such charge, for I think in raising geese I have found an occupation that is entirely open, without fear of any competition from my masculine friends. Although I do not wish to seem bitter, I have not been raising geese for the past five or six years without hearing enough comment to learn that nearly every man is only too glad to have a chance to avow his enmity to the entire race of geese. I admit that geese, like any other stock on a farm, if allowed to range at will with free access to all grain fields, become a nuisance. But should we judge them too harshly? Is it not even human nature to try to get the most and best of everything, and is it fair to blame them for a like weakness? I so often hear it said that geese are worse than hogs that I will take time to compare them a little. I wonder how many cornfields left open to the discretion of the hog as to whether it entered or not have been left undisturbed? Of course, a flock of geese will invade a cornfield at every opportunity, but the result would not be so disastrous. It seems to be in the nature of hogs to see just how much they can destroy. I saw a cornfield this summer after eight hogs had spent one night in it and where the best corn had been it looked as though a cyclone might have struck it. What they really ate did not amount to much, but it seemed that after their appetites were in some measure satisfied they pulled the stalks down just for the pleasure of pulling them down. Geese are not, as a rule, very wasteful. They usually finish what they begin before they look for any more. I know some will say it amounts to the same thing, for a goose can eat it all, but this is not true. Geese are not any harder to satisfy than any other poultry. There is an old saying that a goose will begin at one side of a wheat field and finish it as it goes. This is true, in a sense, but it gives the impression that in a short time the goose will have reached the other side, which cannot be true unless it should be a very small field.

There is a yard around my goose building about the size of an ordinary garden patch, and each spring it is sown in oats for the little goslings. They, with their mothers, get out on it when the oats are two or three inches in height and begin to eat their way to the fence, but often the outside edges are heading out before they get that far, so that when they do reach the fence there has been no waste.

In raising a large flock I find it easier to take care of them and less loss if the goslings are hatched from the first laying of eggs, although if the weather is cold or wet and the building is not heated it will require a good amount of work and care for a few weeeks, yet it certainly pays for the extra trouble, as goslings will stand housing without contracting disease if kept dry and warm much better than any other poultry, excepting ducks, and when the pleasant spring weather does come the goslings will be grown almost before one realizes it, and there will be one picking more of feathers to their credit.

Although goslings are not nearly so subject to gapes or lice as chickens or turkeys, yet it is a mistake to think they never have them, as I have found out by bitter experience. I have lost a few goslings with gapes, but the greatest loss has been from lice. The first trouble was two years ago, when, owing to the heavy snow storm in April, all but twenty of the goslings were late and were nearly all hatched with hens. They did pretty well till the latter part of June, when they began to die. The trouble had the appearance of being some kind of a contagious disease, and as I had one hundred and twenty-five goslings and one hundred and twenty-seven ducks in the building, it seemed a pretty serious matter. Owing to the species of louse, it was some time before it became apparent what the trouble was, but I found that they were almost as large as the turkey head louse, but seemed to stay more on the body of the fowl, especially along the back and under the wings. Whenever the surface feathers were disturbed they dashed out of sight so quickly that they were difficult to locate. Although nearly half the flock fell victims to these nimble little pests, it is scarcely a matter for regret to me, for the experience has enabled me to use the proverbial ounce of preventive (in the form of goose grease) and so forestall any subsequent loss from a like calamity. There is only one kind of louse that I have discovered that seems to belong exclusively to geese, and they are not nearly so disastrous as the ones they borrow. This variety seems to feed somewhat on the feathers and is very troublesome to the young geese when they are getting their large wing weathers, but I never knew them to do the older ones any great harm, so it is not necessary to bother about them after the goslings are once feathered, as nearly all geese have them during the summer months.

There are a great many theories in regard to the feeding and care of goslings. Some of them are that young goslings must not be fed, as it will kill them, and that they cannot be raised without plenty of water to swim in, and should not be housed or cared for, as it is not nature's way. But it is more profitable to lay aside such theories and use a litle common sense. My goslings are fed as soon as they care to eat, a litle bread and water at first and pone afterwards, made from cracked corn, buttermilk and soda, and have only water to drink. They are always put in in case of rain and never allowed out while the dew is heavy. Although I have never but the one year lost many goslings, this year's record was better than any heretofore, as I lost but one gosling out of a flock of ninety-four, until they were feathered and turned out to pasture.

It is also supposed that all profit from the feathers is a thing of the past, as new inventions in the way of spring beds, mattresses, etc., have entirely taken the place of feathers. They have in about the same way that the automobile and electric cars have exterminated the horse. As a proof of this assertion I have sold in the last few years one hundred and eighty-five pounds of feathers, the price being fifty cents per pound, and have been obliged to refuse demands for over two hundred pounds for lack of feathers to fill the orders; so you can readily see that in this community the poor goose's feathers at least are appreciated.

When we poultry people see other stock, especially hogs, being fattened, our first thought is how deeply in debt they will be when they come to market. But when their owners tell us there is money in them and proceed to prove it, telling just how many bushels they feed per day, at so much per bushel, for so long a time, and how much the stock will weigh at so much per pound, and it figures out all right, we take a reasonable view of the matter, confess our erring judgment and do not doubt their veracity. We should enjoy a like courtesy unaccompanied by suggestive remarks about large bushel measures.

Had I ever thought of making a public plea for my feathered friends I should have been prepared to meet any incredulity in like manner, and although I have accounts that figure out all right, I have always raised from fifty to one hundred ducks and have had the feed box in common, so that it is impossible to estimate accurately as to the cost of raising either flock alone. Taken together for the year 1900, with corn at fifty cents per bushel, my account shows an expenditure of thirty-four dollars and seventy-five cents for feed for the entire year, but as some of the corn was damaged, which reduced the price a little, we will call it thirty dollars, and still have a little left for the trouble of raising them. The flock of ducks when marketed, some at ten cents and some at twelve cents by the pound, and others at thirty cents to thirty-five cents by the piece, dressed, amounted to seventeen dollars and six cents, with four dollars for feathers, making a total of twenty-one dollars and six cents, while the geese at ten cents per pound dressed came to forty-four dollars and twenty-three cents, with sixteen dollars worth of feathers, making a total of sixty dollars and twenty-three cents, which made the price for the combined flocks amount to eighty-one dollars and twenty-nine cents. Deducting the thirty dollars for feed, it left fifty-one dollars and twenty-nine cents for the work of raising them when corn was high and poultry cheap.

In the olden time, when geese were kept from year to year for the feathers alone, such a thing as marketing each year's flock was unheard of, and as there was no particular attention paid to the art of fattening, I think it was then the damage was done their reputation as a table fowl, and when one thinks of the Ishmael-like life a goose lived, every man's hand against her, it is not strange if after wenty-five or thirty weary years of hardship her flesh is not quite so tender or the flavor so sweet as a spring broiler or a ten-weeks old duck, but given the same condition, a young goose, say eight months to ten months old, fattened to a finish and baked to a turn, and we have a most delicious dish, as delicately flavored as young duck and quite as toothsome. The demand, however, owing to this prejudice, is not so great for geese as for ducks, so that it is not always as easy to find a local market as for other poultry, but even as the conditions now are they are much more profitable than ducks.

Owing to the ease with which geese can be fenced—a two-foot fence being sufficient to keep them anywhere if one wing be clipped—it is really inexcusable to allow them to annoy one's neighbors, for which, I am sorry to say, this present year my flock would stand condemned. I have been raising them only in a desultory way and have not kept them as they should be kept, yet I am convinced that, with proper equipment, which would require but a small outlay, that the business from a financial standpoint could not fail to be both a pleasant and profitable one.

POULTRY OR BEES—WHICH?

BY MRS. G. B. SMELTZER, MARION, OHIO.

[Read at the Farmers' Institute Held at Marion, Marion County, February 3 and 4, 1904.]

One might suppose a woman would advocate the keeping of poultry more strongly than bees, as poultry is considered more gentle and easier to handle, but my experience this year has led me to decide in favor of the bees. If you will bear with me a little while I will give a rough estimate of the cost and profit of our poultry. We sold no chickens. Eggs were not lower than twelve cents per dozen; we had two regular customers who paid us the same as at the store. From January 2, 1903, to December 12 what we sold to the store and to private customers netted sixty dollars and thirty-eight cents; those for our own use amounted to twenty-five dollars, making a total of eighty-five dollars and thirty-eight cents. That does not include the number set for hatching and what the hens hid away. But from the number set we should have realized five hundred chicks. Owing. however, to the wet season during the time of caring for the little chickens we did not save over one hundred and seventy-five. We have about sixty hens that ought to be laying and bringing in a good profit, but we did not receive an egg from the middle of November last until January 16, 1904. Since the last named date they have managed to lay one and one-half dozen up to the present time. They have had different kinds of feed and when shut in received most of the time three feeds a day, always two a day the whole year round. As to the cost of feed, I will give no details, but know that the hens have cost more than the income from them will cover. You who have poultry can see for yourselves that this must be so, and especially when you buy all the feed they consume. Then there is the trouble, if not shut up all the time, of keeping them out of our stables, door yards, gardens and fields of grain.

In our earlier years we had very little knowledge of apiculture more than we gained by watching bees in hives working, "making honey," as it was called in those days by those who kept bees. I remember one day noon when coming home from school quite a commotion in our neighborhood, caused by a swarm of bees. A sheet was spread under where the bees were acting as if to settle. Quite a number were there with all sorts of pans making a noise to settle the bees, but all to no purpose. We have been asked the queston if we did not hammer on pans to settle the bees. What a glorious time we should have banging pans for six or seven swarms a day during swarming time! It does not take much experience with bees to learn that all the above performance is unnecessary, for if the bees intend to stay they will settle on some tree or bush near the apiary. With the literature we now have concerning apiculture, the beekeepers of today know more about bees than did those who kept them fifty years ago.

The bee family has a queen, drones and workers. These I will not describe, as you are probably all familiar with their appearance. The queen's work is to lay the eggs for new bees, and as she does little or no outdoor work and is seldom killed by violence, she will live to a good old age. Some have lived through four seasons. It is difficult to tell the length of life of drones, because the poor fellows are so often hustled out of the way for the simple reason that they are not wanted, but if put in a queenless hive they might live three or four months. The limit of age of a worker bee is also difficult to determine. In the winter, or when it cannot wear itself out by

active labor in the field, it may live six months and perhaps a year; in the summer time, not over three months, and during the height of clover bloom, not more than six or eight weeks. There are many kinds of honey bees—the black, hybrids, a cross between the Italian and black bees, the Italians and the Adels. The last named bees are considered the most quiet and are much easier for women to handle.

We commenced with a few bees in 1891 and kept only a few until 1897, when there was such a good honey flow; since then we have kept more bees and taken better care of them. We had, a year ago last fall, thirty-three swarms, but lost four through the winter. Starting with twenty-nine last spring, we bought ten June 2. The increase during the season brought the number up to seventy-one swarms that we hived. Several swarms left for other locations. We kept particular account of one hive. The bees were transferred from a box hive to a Danzenbaker June 4, 1903, from which hive one hundred and fifteen sections of honey were taken. This was not considered a good year, as the dry weather set in just as the nectar in the white clover should have been at its best. Dr. Miller, of New York, stated in "Gleanings in Bee Culture" that he had secured from one swarm three hundred sections.

When a hive becomes too full for comfort and another queen is ready to reign, the old queen and her colony will swarm out and they must be supplied with new quarters. The queen is always fed by the worker bees.

Some will say beekeeping is not woman's work. On the contrary, quite a number of beekeepers are women. One writer, in mentioning the transferring of bees, says: "It is better for women to do that work than men, as they are not so messy with it." It causes bees to rob if you are not careful in handling the honey. Some women may be afraid of bees, but from my experience we can become acquainted with these small buzzers if we go around them quietly and use a little smoke of some kind, have our heads protected with a bee-veil and not fight back when they get close enough to sing us a song. I would be a beekeeper in preference to a poultry raiser if it were necessary to live independently of any one else's help. The work with bees is more healthful than with poultry, and the bees do their own house-cleaning where poultry will not. It is quite interesting on a warm day in the winter or early spring to stand in front of a hive and watch the bees carry out the dead ones and clean up.

A strong colony will do all in their power before cold weather sets in to provide food for their consumption during the cold winter days. If a swarm is weak or late in swarming we must feed them some syrup or weakened honey to save them. We have heard some people who keep bees on a small scale say that if they could not gather enough honey to keep them they might die. If such a person should turn his stock out and tell them to hunt for themselves, how much profit would there be in that? To make a success at beekeeping we must use the same precautions as in every other undertaking. After we furnish the bees their homes we do not have the expense of keeping them in repair, as we do our poultry houses. The expense for hives, bees and all, at the beginning is not so great as the cost of poultry. An eight-frame hive complete will cost two dollars and eighty-five cents; a ten-frame hive, three dollars and fifteen cents. These hives are all ready for the bees to go to work when put in and all of the extra cost for each hive is for the little empty sections to fill up the supers after the honey has been taken out. We estimated two thousand five hundred pounds of honey, extracted honey and comb, from our bees last season at an average of fourteen cents per pound, which would bring us three hundred and fifty dollars.

Another reason why some object to bees is that during swarming time they settle so high. If no man is around and you are the beekeeper, have the wings of your queens clipped so they cannot fly and they will settle low, for it is a known fact that where the queen goes the bees follow and cluster around her. Or, if possible, have your apiary in a space where a few low trees are planted. We had the pleasure last fall of seeing the apiary of a noted beekeeper. This apiary was in a yard set out with grapevines, each vine so far apart that a hive could be set underneath and be sheltered from the direct rays of the sun, for shelter is beneficial to the bees.

A man owned twelve stands of bees, the tops of the hives so constructed as to receive the proper amount of heat for incubators. The tops were filled with eggs and all that is to be done is to turn the eggs in order to have a good hatch. It was such a success that the next year he made his hives larger to hold more eggs. A woman who was afraid of bees thought if she could use them for hatching chickens she could learn to like them. Another man used his hives for a hotbed by placing dirt on top, put his seeds in and raised all of his cabbage and other plants in that way.

The relations between the beekeeper and the bee are physical, mental and moral. Interfere with a bee's notion of right and duty and he at once administers a stinging rebuke to those faint-hearted humans who allow others to interfere with their homes and privileges. The mental relations appear when a thoughtful man studies the wonderful life and habits of the bee and the social order that prevails inside the hive. The moral relations are exemplified when in the latter part of summer the bees swarm to your neighbor's fruit trees and you try to follow out the principles of the golden rule in your relation with those neighbors.

If bees punctured grapes, as is often claimed, why do they cluster three and four,-yes, more, around one hole, or sometimes standing on top of each other, all running their tongues down into the same hole? If they could make fresh incisions they would not crowd and jostle each other as they do, but each bee would make for itself an opening where it could work without being hampered. I have seen a clipping which says that the real culprit is a little bird, quick of flight, scarcely, if ever, to be seen around the vines when any human being is present. This bird, about the size of a sparrow, striped, and called the Cape May warbler, (dendroica tigrina), has a long, sharp, needle-like beak. "After his birdship has done his mischief then come the innocent bees to suck the juices of the berry, finally leaving it dry and withered up."

Jack Frost and Mr. Honeybee, two worthy citizens, have upset the theory of scientific men that the two crops, ice and honey, removes fertility from the soil. We may cut ice on our neighbor's pond for years and make a fortune by doing so, yet all our work would not rob the soil, nor will the pond be injured in the least. Likewise our bees may take a ton of honey from his fruit trees, which may sell at a good price, yet his farm will not have lost five cents worth of plant food, nor would he have been one cent better off if our bees had not taken any of the nectar, but had acted as dry nurses to his baby fruits without pay or reward. Both bees and ice bring unnumbered blessings to man. We have known fruit growers, when they find the bee sucking some cracked and useless old fruit, to forget that the bee did more than they in the making of these fruits.

"Man has never tamed the bee as he has the horse, dog or other animal." These have surrendered their freedom, not so the bee. Man coaxes and partly directs him, but he is still untamed. Left to itself, the swarm will not come begging for shelter from man, but fearlessly fly off into the wilderness to live as its ancestors lived. From the first gleam of consciousness the bee knows that it is born to toil without reward and without hope of posterity. Instinct, heredity, spirit, call it what you will, drives the bee on to labor without ceasing, without hours of lazy ease or holidays, and for what? Simply for the future, that mysterious time for which he is prompted to provide. Truly the lesson of the hive goes deep into the human heart and soul.

MAPLE SYRUP.

BY D. J. POWELL, DAMASCUS, O.

[Read at the Farmers' Institute Held at Damascus, Columbiana County, February 17 and 18, 1904.]

There has been so much said and written on this subject, that I can scarcely hope to say anything new. I would not regard it as right to take the time of this institute in its discussion, were it not for the fact that, notwithstanding all that has been said, there is still a large amount of syrup made of a low grade—yielding no profit to the producer and giving disappointment to the consumer.

By giving our plan of operations and adding "line upon line, here a little and there a little," some may be helped to better results, and the consumer furnished with one of the most delightsome sweets. I can only outline the plan by which we have succeeded best, throwin out a few suggestion and calling special attention to a few things that I regard as most important. Many of us are slow to adopt new methods, it is so easy driving in the old ruts, and still slower to give heed to the little, or seemingly unimportant details, although in them lie the very essentials to success.

Previous to the canning process, the maple product was largely made into sugar. A good article of syrup, uncanned, will soon crystallize and a poor grade will ferment, neither being satisfactory. With decreased production, owing to the destruction of the maple trees, and the ability to keep syrup indefinitely by canning, but little sugar is now made. Without further preliminary, I will proceed to outline the work.

It is said that "cleanliness is next to godliness." In the sugar camp, if cleanliness is not next to a high grade of syrup it is so near to it, that it may not be ignored. First then keep everything clean. We will assume that every article belonging to the outfit has been looked after and is in good working order, and that plenty of good fuel has been provided. We use wood almost exclusively for fuel. This is cut and stored in the wood house, as soon as possible after the season is over. During the summer there is added to this all the pieces of old rails we can gather on the farm. Nothing is more convenient for finishing up at the end of the run. Then, should there come a decided breakup in the weather any time after the 15th of February will be time to tap.

This should be done with a three-eighths bit, care being taken to bore in sound wood, about one and one-half inches deep, and, if you wish to preserve the life and vigor of the tree, bore toward the heart. You thus cut off less of the living fiber. Tap at the height most convenient for you. We prefer to tap high rather than too low. It has been ascertained that nearly all the sap flows from two inches on either side and eight inches above and below the spout. Considerable of the wood thus drained never regains its normal condition. This may guide you in selecting a place to tap. I would not remove much of the outer bark, the wound will not heal so readily. There are a number of different makes of metal spiles or spouts, each making special claims of merit. Last year we got a supply of the Grim spouts. Mr. Grim furnishes with the spouts a tapping outfit, consisting of a three-eighths bit and two reamers. The merit of the spout lies in its use for the tapping and the two reamings. Simply drive the spile a little deeper each time. Do not be too hard on your trees by hanging two or more buckets on one tree, unless the trees are very large—others will enjoy maple syrup after you are gone. Metal buckets are the best. If good tin can be secured, we prefer it to galvanized iron because it is more easily kept clean. We have some tin buckets that have been in use for twenty years which are good for many more that have had only one coat of paint on the outside. Most tin, however, will require painting inside and out. If you have some fairly good wooden buckets, not too old and soaked with sap, do not make kindling of them just yet; at a very small cost they can be thoroughly painted and they will give satisfaction for years.

Before leaving the buckets, I want to call special attention to the importance of keeping them clean and sweet. When the season is over, they should be thoroughly washed with hot water, carefully dried, and then stored in a dry, clean place. They should be carefully watched, after being in use a short time. As soon as they become slimy or slippery (this is easiest detected by passing the fingers over the bottom after emptying) they should be washed with hot water. We haul hot water for washing them around to the trees in a good sized milk can. If you desire to return the buckets to the trees immediately, they should be wiped dry. We prefer to wash when the sap is flowing but little, if any, and then turn them upside down, carefully placing them so the air can circulate under them, and let them drain and dry out. It helps to keep them sweet, if they are taken down when the run is over and turned up as indicated. The weather will have much to do with the number of times the washing will b necessary. Perhaps no other one thing has so much to do with making a low grade of syrup as sour buckets, so I want to emphasize this important matter.

After hanging the bucket, put on a cover. Some years they are not so essential, other seasons the saving during one storm will pay for the covers. Hauling should begin as soon as there is enough sap to justify starting the boiling. A galvanized iron hauling-tank is best. There are several varieties of insects and beetles which appear, after waking from their winter's sleep, to be greatly attracted by the sweet water. Like most other moderate drinkers they very often get beyond their intentions and are found floating in the buckets. It is next to impossible to keep them out, even with covers. These with any other foreign matter that may have drifted in, should be carefully strained as the sap goes into the gathering tank.

Ordinarily, galvanized iron is best for the store tank. If your arrangements will permit, place it on the shady side of the sugar-house. If you cannot do this, do all you can, by covering, etc., to keep off the sunshine and to keep the sap cool until it is ready to be evaporated. This is just as important and is for the same purpose that you keep your milk cool until delivered to the creamery.

The kind of evaporator to be used should be determined by the amount to be evaporated. I would not advise buying a high priced evaporator unless you have more than two hundred good trees. Your local tinner can get you up a pan for less than half the cost of the patented machine, that will be quite satisfactory. The greatest objection to the simple pan is boiling the same sap over and over. This I think can be remedied by placing two or more partitions across the pan. These will help keep the pan in shape, and the sap can be carried from one division to another, either by gates in the partitions, or siphons, or by dipping. The syrup can thus be removed frequently. Be sure you have capacity in your pan, to get all the sap into syrup in a few hours after it is gathered. A litle too large a pan will not be so serious a mistake, as one too small.

Build your fire as soon as the sap begins to run into the stove tank. This is a time for action. It is not the time to settle the Russo-Japanese difficulty or establish the standing of the spring candidate if your talkative neighbor should call just then. There must be no simmering now Make everything hum, or rather foam. When once under way, with our litle evaporator ten feet by three and one-half feet, we are about as busy as we care to be. As the sap begins to boil and through the whole process, care should be taken to skim off any impurities that may collect. We get the best results and make more speed by boiling with only a small amount of sap in the pan, about one inch to two inches. Some kind of an automatic regulator is almost indispensable if you undertake this. Even then it will be necessary to keep a sharp lookout. Should the regulator be set for a certain flow, when the stove tank is nearly full, and the pressure great, it will be necessary to change it when the pressure becomes less. To hasten the drawing off of the syrup when starting up, we dip from the rear of the pan to the front, allowing the sweeter sap to flow to the rear, from whence it is drawn off, as soon as it indicates a density of a little less than the standard. The drawing off is quite frequent, the syrup flowing into a felt strainer suspended in a milk can. The felt strainer is a very valuable addition to our outfit, we cannot recommend it too highly, as with it the mineral deposit which gives so much trouble at times is entirely removed. Fairly rich syrup must be quite hot to go through. These cans of syrup are hauled to the house and after the run is over the product is finished by using a pan as large as the top of a kitchen stove and about eight inches deep. About five gallons of syrup are put in the pan at one time. While it is getting warmer, we beat up two eggs, and stir into the syrup. As the eggs coagulate the albumen entraps many little atoms that have escaped the strainer and floats them to the top when it comes to a boil. The scum should be carefully skimmed off. To determine when of the right weight, we use a hydrometer, made for this special purpose; when the hydrometer indicates the proper density the pan is lifted from the stove and the syrup again strained, this time through two thicknesses of cheese cloth. By finishing as we do, there is no difficulty in securing uniform weight. We fill the syrup into cans at once but do not close them until the syrup has pretty well cooled. Then we refill, putting in every drop they will hold, and turn the top on very tight. We find no sediment in the bottom of our cans, no matter how long they stand before emptying.

Each year maple syrup is becoming more of a luxury and the demand seems to be for smaller packages. We have used a good many half-gallon cans in the last two years. Quart cans and bottles are also used.

Put your label on the can and make it tell the truth. You will doubtless have some low grade syrup; mark it such. Sell to consumers. You will have no trouble in holding your customers if you make good syrup and deal honestly. We have had some of the same purchasers for twenty years. No first class syrup need be sold for less than $1.00 per gallon.

The weather is such a large factor in this business that without its co-operation, we will fail, both in quantity and quality, after having done our best. Some may say I have outlined too much work, to which I reply, "There is no excellence without great labor" and "eternal vigilance is the price" of success.

LEAKS ON THE FARM.

BY T. F. HAUGH, BASCOM, O.

[Read at the Farmers' Institute Held at Tiffin, Seneca County, January 20 and 21, 1904.]

A leak on the farm is a loss directly or indirectly, and if we can stop these leaks we will add enough yearly to the famer's income to pay a large amount of the farm's expense. Many and varied are these leaks, and hardly any farm is wholly exempt.

To reduce to the minimum these annual losses is one of the most important problems confronting the farmers, and each should seek the best method of solution. Time is too limited today to discuss these leaks in detail, and we will call attention to the more prominent only..

The loss on the farm by the many useless cross and middle fences is something serious when the aggregate is considered. On many farms we see fields of wheat or corn separated by a useless fence, one not perhaps to be used for three or four years. The loss in idle fence row land, keeping same clean, and the cost and repair of fence are leaks, which by better management might be almost wholly avoided. Fence rows are a vast source of loss through weed production, and one wonders why some farmers maintain long lines of fence with their waste land and crop of weeds. The absence of fence settles the matter, for when one crop crowds right up to another there is no chance for weeds, briars and brush. One method of stopping this leak would be to remove all cross fences; then have enough portable fence to run from line to boundary of farm and enclose only that part used for pasture. On the great grain farms of central Illinois they fence only a permanent pasture, and a lane from pasture to feed lot and barn. It has been estimated that the land used for fence rows amounts to five per cent of our cleared land.

Another leak which must make glad the heart of the machine agent, and brings joy and shekels to the manufacturer, is the expensive habit of letting farm machinery stand out in the weather to rot and rust from one season to the next. This is well-nigh an unpardonable sin. A day's drive in the country will show that many who must know better leave their implements to the tender mercies of the thunder storm, or winter blizzard, a constant leak to their purses. On some farms this leak amounts to the loss of the machine in three or four years while if properly housed the same machine would last two or three times as long. Plows and cultivators are thus exposed and so rusted that a day is usually lost in the spring to get them in working order.

The farmer who thus lets his labors leak away, is generally late in getting out his crops, behindhand all summer, and at best gathers a poor crop amid weeds and vexation.

Another leak is the neglect of fruit culture. Our pioneers planted our old orchards with the best fruit trees obtainable sixty or seventy years ago. Those old trees have done their full share of fruiting, and are now exhausted, dying or dead. On the majority of farms the younger generations have neglected orchard planting, and as a result our county produces only about one-third the number of apples that were grown thirty-five or forty years ago, when the old trees were in their prime. Some few have planted thrifty trees and cared for them, and are now receiving their reward. Others have planted, but have never cultivated, pruned or sprayed and to-day have only a mass of tangled, diseased trees, whose best product is knotty, wormy culls. A poor tree is dear at any price. I have seen six dollars worth of peaches marketed from a six-year-old tree; this was accomplished by cultivating, spraying and thinning. A dozen trees the same age in a neighboring, neglected orchard did not produce fifty cents worth of fruit. Properly cared for, an orchard will bring full measure of golden, luscious fruit.

Another leak is the use of immature, light or impure seed. Many f us neglect this important matter and then wonder why our crops yield so poorly.

In the series of experiments conducted by the Agricultural Department in Washington, it was found that good heavy seed weighing two and two and one-half times as much as light seed produced a crop bearing the same ratio over the latter as that shown by the seed. Through the use of poor seed last spring, hundreds of acres of corn had to be entirely replanted. Seed corn should be selected when thoroughly ripe, the most perfect ears taken and carefully stored away. It would also pay if our seed wheat and oats were run several times through a fanning mill and all light grain blown out, leaving only the most perfect, plump and heavy grains.

Another leak on many farms is in the matter of feeding and caring for, or rather not caring for stock. The feed is very often scattered out in a muddy barnyard where half is lost by being trampled in the mud. No shelter is provided other than the lee side of a fence, for such farmers rarely produce enough straw to make a stack shelter. The loss of stock by exposure and the loss of the extra amount of feed to keep up the animal heat amount to many thousands of dollars annually.

Another aggravating loss is for farmers to buy some new cooking range or creamery or something of that character at about double the price a similar aritcle could be bought from their local dealer.

Then we have the losses and leaks in trying to farm too much. We do not farm thoroughly enough. Some will plan so much work that every one about them is compelled to work early and late and put in every hour in order to accomplish so much. There is no time for rest, reading or recreation. The aim of some seems to be to raise more corn, to feed more hogs, to make more money to buy more land to raise more corn, etc. This makes farmers slaves and their wives the slaves of slaves, and results in a loss of health, happiness and contentment. It is a deplorable fact that in the homes of many farmers you can hardly find a dozen books, and often not even a newspaper. In this age, when books are to be had at a low price, and newspapers almost for the asking, is there any reason why the farmer should not provide his family with good books and papers? I once passed a night with a man who boasted of owning over one thousand acres of good land, and in the evening looked around for something to read; there were no books, papers or magazines, and all I could find was an Ayer's almanac in German.

A leakage gone already too far and arousing general alarm throughout our country is the destruction of our forests. Had this destruction stopped thirty years ago all would have been well. It is the havoc wrought since 1870 in in our timber lands that is now so keenly felt. A few small timber tracks remain, as not all our farmers have allowed the woodman's axe to destroy the beauty of the woodlands and wreck the glory of the groves. It would be difficult to estimate the loss our country has sustained in this wholesale forest destruction. It is an open question whether the net value of the crops of thirty years would equal in value what the standing timber on the same land would now be worth, had it never been molested by the lumberman.

These leaks still continue, until in many cases, the last old oak is felled on the old homestead, and a desolate space is left, where once the grand old forest trees "against a stormy sky their giant branches tossed." Without the woods there is no natural reservoir to hold the rainfall, but it runs at once to our streams, washing away and gullying our hillsides, carrying with it the richest elements in our soil, and leaving us in a few years a naked barren surface where even weeds refuse to grow. Efforts are now on foot to bring legislation to bear on this national question, and we understand, a bill will be introduced in our next legislature to exempt from taxation all timber lands in the state.

What can be done to modify existing conditions, is to cut no sound tree unless absolutely necessary for building purposes, allow not a hoof of any kind in your wood lot for the next ten years, and nature will abundantly replant it with forest trees. Five years ago we fenced off part of our wood lot and already it is full of a nice growth of young forest trees. Farmers should plant trees on their steep hillsides and in the odd nooks and corners of their farms. We planted about five hundred forest trees five years ago upon a naked hillside and already the growing trees have stopped the evasion and clothed the former unsightly hillside with a mantle of beauty in summer and a wreath of gorgeous colors in autumn. Next to tile drainage in permanent improvement is that of planting trees. If we were permitted to give only two words of advice to the younger generation of farmers, they would be, "Plant trees." It will be a pleasure to watch their growth, and as they cast their shadows about you, you will look upon them almost as your children. Plant them where they will not be disturbed, but grow to a ripe old age, and when they bud and leaf and bloom and fruit you will feel that you have added a living page to the great book of nature. The singing birds nesting in their branches will pour out in melody a benediction of praise upon your head, and the happy shouts of children as they gather the harvest of nuts or fruit will ring down the avenue of years, from generation to generation, in notes of thankfulness to your memory.

LEAKAGE.

BY T. WILSON HANNA, SAVANNAH, O.

[Read at the Farmers' Institute Held at Nova, Ashland County, December 11 and 12, 1903.]

Our material advancement and prosperity is a theme which we do well to study. It will be the part of wisdom to look after the reasons of failure, if failure there be. If upon search we find that the difficulties are justly chargeable to our own management, then so far we have the key to the situation. We do not need to economize more because of our increased poverty or our worse condition, but rather because of our increased opportunity for larger development and usefulness. Every new invention, every new convenience adds to the expense account, but such things increase the interest of living, set in motion new trains of thought and develop the mind. If we compare the outfit with which our fathers farmed their land sixty years ago with a modern farmer's array of machinery, we would at once conclude that increased profit must be realized, and all needless loss be avoided. We frequently have our attention called to the fact that all successful business firms and manufacturing companies husband with the most vigilant care every kind of waste and offal. Are farmers as careful as they should be of the mites? Do we turn the waste into capital? We spend large amounts in the purchase of implements and conveniences. Are we careful to stop all the leaks in our business that we may offset the enlarged expenditure in implements? There can be no doubt about increased cost of production, especially the cost of producing a poor crop or animal. There are individuals who are always lamenting the sad lot of those who till the soil, persons who are always looking on the sombre side of life, poor crops, low prices, poor help, or no help at all, and a thousand other ills. I will not deny that we have difficulties to contend with. There are wrongs which ought to be righted, burdens to bear which ought to be lifted, but they are not new, or greater than in former times, and in the next place, we may better our present condition by improving some of our present modes of life and action. I do not propose talking altogether about leakage in natural things, for bad as loss in that direction is, it is not the worst by any means. Neither is "farm leakage" my theme, for I am glad to know that our villagers are here and that many of them take an interest in these annual gatherings, and this is not strange, for we are part of each other. In our community nearly one-half of our wide awake young farmers come into the village to get their wives, and a large number of the town boys go to the farms to get their wives, and as a rule I think each fellow is willing to swear that he could not have done better.

First then, are we worse off than ever before? What are some of the facts? When Abraham Lincoln was postmaster it cost six cents to send a single sheet letter thirty miles. It cost ten cents to send a letter one hundred and fifty miles. It would have cost you twenty-five cents to send a letter from here to New York. I remember when it took two pounds of nice golden butter to buy one yard of print. I remember a farmer selling on a contract to a Plymouth merchant as fine a load of dressed hogs as any man ever drew to market, at three dollars per hundred, and when they were delivered the merchant refused to take them because he would lose money on them at that price, and another merchant out of compassion agreed to pay him two and one-half dollars per hundred if he would take one-half of it in goods. I remember sales of fat cattle at less than a penny a pound; of good strong sheep at 62½ cents per head. We must not think of the prices of the last year being the lowest farmers ever struck. Our boat is not the leakiest old hull that ever was adrift.

We are reminded of our enormous tax rate. Yes, I think there is a large barrel there with some big holes in it that we farmers ought to insist on plugging up. But it would have been impossible to have paid such taxes fifty years ago. We must not forget some of the good things we now have which a former generation did not have. I will mention just one thing in illustration—our magnificent free school system, not perfect yet, but a wonderful blessing. Some time since I had in my home one night a genial friend, a doctor of divinity, from Chicago, and as we talked of other days, and the friends we had known, some of whom had "gone on before," he said: "I visited my father some weeks ago; he is an old man of nearly four score and ten, and I was curious to know how such an one looked on life. I said, "Father, how does life appear to you now? There is not much interest to you, is there, in all this busy rush?' The old gentleman replied: 'Well, I never was more anxious to live in all my life than I am today.' 'Why, how can that be?' 'Well,' he said, 'this is a good deal better world to live in than it was when I was thirty years old; it is a grand time to live now. There is so much being done for the uplifting of the race. When I was thirty years old every man drank whisky. It was not a very serious offense for a good man to get drunk. Very little was being done to help the unfortunate, the blind, the deaf and dumb, and others. When I was thirty years old there was no telegraph lines, no telephones, no railroads. When I was thirty years old there were no binders, no mowing machines and no sewing machines.'" The list might have been almost indefinitely extended with buggies, bicycles, organs, pianos, etc. We have all these things now and we must pay for them. We can better pay for these luxuries (necessities, many of them are, according to present modes of life) by stopping some of the leaks. They are so many and so varied I can only refer to a few of them. If recounting some of them will suggest to our minds others, and prompt us to the use of the soldering iron, we will have accomplished our purpose.

One reason of our failure to secure profit is bad management, working without plan or forethought. Some men never think of providing the things they need until the day and hour they need them. A broken farm implement is put away in the fall, and the place may be a fence corner, never to be thought of until the day the following spring that the farmer wants or needs to attach his team to it, and then he must go to the shop, or send one hundred miles or more to the manufacturer for the broken piece, and then about ten chances to one there has been a mistake, a change in the pattern, or something else and there is failure. The day he wanted to use that implement the ground was just right, the time of year and conditions were all right, but by the time the machine was ready, the rain came and the work which ought to have been done a week or ten days before was undone and the difference between a good crop and a poor one was simply —leakage. That hole ought to have been mended the day the fellow was toasting his toes in the corner grocery the winter before. It is wise to do in the time of leisure the things which otherwise must be done at some future time, which time may prove to be of all others the most inconvenient time. The farmer who hauls his wood one load at a time, to say nothing about cutting it, will be almost sure to have to haul a load the day he wants to plant corn, or the day he needs to bend every energy to get up hay. Did you ever know a farmer to be called from the field about 11 a. m. to cut wood to cook dinner? I know of some who ought to have been. It goes without saying that unless the "good woman" is pretty close akin to the angels, there is serious risk of domestic infelicity—leakage, anyway.

There is not only this bad planning of our work, the work we do manage to get done at some time or other, but closely allied to this is undertaking to do more than can possibly be accomplished with the means at hand, or accomplished in a way which will give only meagre and unsatisfactory results, and consequent loss. There is that ten-acre corn field. There is so much capital invested in the land, a certain amount of tax to be paid on it. It cost just so much to plow and properly prepare the ground for planting. It cost just so much for the seed and the planting. It has all been well done up to this point. Capital, labor and all amounts to just so much, crop or no crop. You must pay that in any event. The state will not relinquish the tax due or any part of it in case of failure. If the floods come, or the frost comes and the crop is lost or damaged you are not to blame. But suppose just at the right time, and there always is a right time, to cultivate that corn you were too busy with something else, and were afraid to risk a little extra labor, if it did cost two or three dollars more, and thereby the weeds and the grass get a start which you can never catch up with, your crop shortened, your soil exhausted and fouled with weed seed, where is the profit? Where is the leakage? If a man has so much farm work to do that he can not properly feed and care for his live stock, can he reasonably expect it to yield a paying profit? I know that we have had a difficult problem to solve with regard to the employment of labor, but my point is that there is no profit in poorly done work. We ought to decide for ourselves how much we can do, and do it right. There is no use of attempting the impossible. There is such a thing as being "penny wise and pound foolish." You have heard of people biting off more than they could chew.

Right in connection with the loss which occurs from the want of tillage of farm crops is another one which we ought not to omit to mention in looking after the leaks, and that is attempting to keep more live stock than we have room for or feed for. The longer I live the more fully am I persuaded of the bad policy of keeping scrub stock, or keeping good stock in a scrub manner. How the feed does leak away that is fed to ill-bred, ill-shapen, ungainly animals of any kind; leaks away just as certainly as the milk runs out the milk pail with a good sized hole in the bottom of it, while you are pumping away on the top end. Bad as that is I do not think it any worse than feeding good feed to well-bred animals in the mud and filth, and without some protection from cold and storm. I believe it to be a matter of rejoicing that conditions along these lines have been wonderfully improved these recent years, yet there is room for further advancement.

Leaks are not always at the bottom, half hidden, but at the top sometimes. Pat put a number of hams in some brine in a barrel. After a time he went to the barrel for one of the hams and they were all gone. Pat instituted a search for the place of escape and finally found a hole in the barrel through which he said the hams had leaked out leaving the brine.

I remember that when I was a boy engaged in milking, and the pail was dangerously near full and I felt admonished to get another one, I excused myself from that loss of time by saying that it was only foam that was making its way down the sides of the pail, but about the time I was ready to move pail and stool there were little pools of milk on the ground and it was just as clear a case of leakage as if the milk had got there through a hole in the bottom of the pail. So it is in other directions. Our land is left to leak at the top. To accomplish this feat I know of no better plan to adopt than to raise a good crop of weeds. It is strange how long it takes some of us to learn this lesson. Suppose we get our land mulched after a time with a good crop of decaying weeds, and there may be an open question here, yet I suspect the recompense would be very slight. We have very much diminished the crop we started to raise, and have the conditions right to perpetuate the malady in a more aggravated form the next year. It does not necessarily follow that we have succeeded if at the end of the season we have a clean corn or potato field. If the weeds are permitted to get a start and grow and are eventually cleaned out and destroyed it has been at a large expenditure of labor, and then from the time the weeds were above ground they were stealing away from the crop we were trying to raise the plant food necessary to the perfection of the crop. When a man has to mow his potato ground before he can find the rows to dig the potatoes, in all ordinary cases he has been guilty of an inexcusable blunder and has no right to blame his want of prosperity on either free trade or high tariff.

Perhaps a leakage as often thought of and referred to as any other is that of the waste of fertilizer from badly arranged barn-yards, badly taken care of; that of open stable floors allowing valuable plant food to drain off into the creek or to be lost in some other way. And not the least by any means among the sources of loss of fertility along this line is top leakage again. If the heat which escapes from some of the conical piles hard by and some of our horse-barns could be turned to some practical purpose it might be of some account; as it is, it is clear waste and often worse. I cannot take time to discuss the best methods of preventing these sources of loss, but we will be forced to give them more serious thought in the future than we have yet done.

I am persuaded that there often occurs a loss in the economies of our home life by failing to produce on our own grounds by our own efforts many necessities and luxuries for which we pay our hard earned money or fail to enjoy altogether. What a farce so many of our farmers' and villagers' gardens are. Almost better if they never attempted anything of the kind. I believe upon the whole the dweller in the town is often in the advance. There are some men in some of our towns far more expert in holding down a bench on the shady side of the store buildings than in cultivating their gardens and while they work at that they dilate upon the hard times, the grinding monopolies and all that, while the fact remains that if they had been at work in the lot back of the house where their families stay they and their families might have a good deal better living than they do have and stop some items of expense. Some of us farmers might profitably spend some more time in cultivating a good garden, raising a variety of vegetables and small fruits, stop some outgo and live in a more wholesome manner. So much can be done now by improved methods and tools and by the use of horse power that there is little excuse for neglect. I have regrets about a good many things in my life and one of them is that I did not have a Planet Junior hand cultivator twenty years ago to work my garden with. By doing the work just when it ought to be done I can do more work in one-half hour than I could do in the old way in two hours. Then I can the better do the work at the right time because I can do it so quickly. Much more might be said about all these ways or limiting our expenses in some cases, increasing them in others in order to stop leakage. There is a long list of ways by which people let that which they ought to keep slip out their possession. There is the drink habit, the tobacco habit, the quack doctor from the traveling Indian up, or down, just as you have a mind to have it, the lightning-rod swindler, the street fakir, and all the rest.

Let me call your attention to one thing more. My brother farmers, have you not observed when you drive into one of our larger towns how many of the homes, modest ones too, have surroundings in the way of neat, well kept lawns with flowers and shrubs and much that pleases the eye? Well, your wives and daughters have seen it all if you have not. I am sure the bright boys have taken it in. I wonder if they do not return to the old farm house in the evening with such thoughts as these: "Well, this looks pretty plain. There are no flowers in our yard—they are not nice anyway. There are no beautiful shrubs or trees. There is no smooth lawn with a velvet carpet of green grass. There are some old ash-barrels, some chicken coops, some docks, some old tin cans. I wish I could live in town." And the more they think about it the more the desire grows to leave the farm and seek the attractions of the city, more's the pity. I know we cannot keep all of our boys and girls on the farm—heaven pity the city if we could! But let us send them there with their minds full of the pure and beautiful in nature, with hearts full of affection for the old homestead and the most pleasant recollections concerning it. Anything else will be a sad loss to them and to those who remain behind. Do not urge inability to make this home adornment. Two-thirds of those living in the city are not as well able to live in homes with beautiful surroundings as is the average farmer. I do not urge expensive improvements. One of the most delightful things about a residence is a smooth, well kept lawn and, barring the water privilege in hot, dry weather, the farmer can have that as well as the city gentleman.

Do not let this refining influence slip out of your grasp for lack of energy to seize upon it and turn it into a stream that shall gladden and ennoble your lives. I am not sure but that one can suffer all kinds of material loss and calamity and yet be a pretty fair kind of a man in many respects. Certain it is that there is worse loss than material loss. One who has failed in the first years of his youth and manhood to do all that he might have done to secure a competence is not so unfortunate as the one who has let the opportunities for mental and moral culture all leak away. I have known young people surrounded with so many advantages for equipping themselves well to fight manfully life's battles, and gain the rich heritage of a useful, noble life and yet let it all pass by unappreciated. The one who has failed to make the most of material things may by some freak of fortune inherit a patrimony to ease life's declining years.

Indeed, there are many who have done their best and yet circumstances which they could not control, misfortunes for which they are not responsible, have drained away their possessions. But there is a mental and moral leakage which has no hopes, which has no such palliations. What wonderful opportunities are before every young person in this country. I do not refer to the opportunities to get riches or fame, but to secure a culture which will entitle the possessor to his own respect and make him useful to his fellowmen. I am glad that so many are making good use of these facilities for improvement, but are we all, or do some of us let the golden harvest perish at our feet?

The greatest menace to many communities is the want of proper appreciation and improvement of the rich heritage provided for the young people of this country, a heritage which now stands waiting for the true seeker and the earnest soul, but which will assuredly drift away from this slothful generation if we do not take heed.

CONVENIENCES IN THE HOME.

BY MRS. D. H. FARLEY, R. R. 20, SWANTON, O.

[Read at the Farmers' Institute Held at Richfield Center, Lucas County, February 8 and 9, 1904.]

All that is lovely and worthy in our lives centers about this little word of four letters—Home—that, in our language, means the place where one lives and loves, and strives to attain all that is good and desirable; the spot that the soldier fights best to defend, that the workman toils the hardest to maintain and to which he turns at night, with the feeling that this one spot, with the loved ones sheltered by its roof, is worth all the toil and weariness that must be borne in the heat of the day.

During the last decade, we have been advancing steadily and rapidly toward the beautiful and artistic in daily life. There is an instinct we are told in the hearts of nearly all women which leads them to make a home from what was merely a house. Time was, when ill-arranged homes far out-numbered those whose arrangement and furnishing indicated some thought of improvement on the part of the maker. To go far back, to the very beginning of American homes, we find that the Colonists, as soon as they had provided for daily food and defense against the Indians and wild beasts, began to build homes at once, and we of the present time can find no better rule in our home furnishing than the scheme the Puritans considered good, one piece at a time, without any haste, as it seemed to be needed for some special use. With all that has been said or written about the house beautiful, we have never improved this plan of things, provided one desires a home and not a house, filled with furniture that makes it resemble the show room of a furniture store.

The early day homes were built substantially, for the needs and uses of every day life. The furnishings were plain, all the articles were for daily use of the hardest sort, and were strong and durable. Generally, amongst the early furnishing of the home came the cradle, which might be perhaps only a sap trough, but made strong and staunch to last through more than one generation of hard and continuous usage. There was no question of race suicide in those days, and, even if they had not considered it an impious question, they were too busy living and loving and rearing their children in the fear of God, to have time for asking, "Is marriage a failure?"

But by and by came prosperity, which brought to the shores of this new country large numbers of people who delighted in idle show, which was considered by the Puritans as a great offense against God and man. In the wake of these wordly people came servants to care for their possessions, and slowly but surely, the Pilgrim wives fell from grace, enough to look longingly on these same possessions. It was the backward swing of the pendulum, certain after years of rigid self-denial; and if they were wrong in this, womankind has suffered for it ever since, for possessions multiplied until they became a care and never since have we been able to go back to that ideal time for the American home, when no woman had more than she could care for with her own hands.

Think you we are more happy in our homes of today than were those people? In these progressive times, it is nearly impossible to take up a paper or a magazine, which does not describe in glowing language, the blessings of modern inventions. Breathlessly we read of the triumphs of science and sadly recall the hardships, privations and inconvenient days of our grandsires, and wonder how they ever endured existence.

It is stoutly maintained that modern improvements lessen labor and we are all willing to admit that this is generally true, but not always. An incubator saves twenty-one days work to an indefinite number of hens, but the owner of the machine is compelled to make a slave of himself, attending the lamps, and turning the eggs, while the sacrifice is not appreciated by the biddies, who are endowed by nature with a propensity for sitting. Do you not think the inventions that we call a boon would have proved a bane to the ancients? What havoc the inquisitive trunks of the elephants, or the mischievous fingers of the monkeys would have played with the wires and buttons of an electric lighting system in Noah's Ark. If inventions were perfect and we infallible, then life might be bliss, despite the modern worries. We are not, however, considering what we should like or what ought to be, but what is, and it is a hard, plain truth, that unthawable water pipes destroy our winter's peace, in zero weather, and occasion many perplexing thoughts and bitter words which in some cases might lead to profanity. Even the people that have clectric lights in their homes are sometimes left in darkness at the most inconvenient time, and the same with the gas with which many people warm their homes; it is occasionally conspicuous for its absence; especially is this noticeable when the mercury is in the neighborhood of zero.

I suppose, one of the most important parts of what we call home is the house in which we live. If building a new home we can have it about as we think we want it, providing we can stand the strain on the pocketbook, which nowadays is a matter of no small importance, considering the price of all kinds of building materials. It is not often the case that a house is built that is in every particular just as satisfactory as was anticipated, and we find, when we come to live in it, that there are some things which we wish were a little different.

If we, ourselves, were building another house, we possibly should use the same general plan as our present one, but the style of the inside finish I should have quite different, for it should be of the plainest; the casings should be slightly oval with a bead at the edge, and with no Queen Anne corner block or any complicated mouldings about it, and the material should be oak, if possible, especially for the living rooms, because it holds the finish so well and is not easily marred.

It is not a bad idea in building a home to plan first for the kitchen and living room, and the rest of the house as an addition to it. This remark serves well to illustrate the truth which experience teaches, that this part of the house deserves a place in the builder's thought, which it does not always receive. The kitchen, which is one of the most important parts of the house, should be planned that it may be easily kept clean, convenient to work in, and as comfortable as possible for those who occupy it the most of their time. In size I would not have it too large, if it is to be used only as a cook room, as that means many extra steps, nor too small, as that causes confusion. It should be well lighted, the windows hung with weights, that they may roll easily from the top or bottom, and, if there are no blinds, screens should cover each entire window. One great addition to the kitchen, is the screened porch, which is a "thing of beauty and a joy" as long as it lasts, is not very expensive nor difficult to make, providing there is a handy father about the house, and it seems to me that any man could screen a porch without waiting two years for the carpenter who never comes. I have so thoroughly enjoyed my screened porch that I should like to encourage every woman that has a kitchen porch to do likewise. In regard to the finish of the kitchen walls, I prefer paint; a washable paper might do as well on hard finished walls, but paint wears well and is easily cleaned. For the floor finish, I wish I could tell you from actual experience how nice linoleum is. I can tell you that it costs quite a little sum to cover your kitchen with a good quality of linoleum and that is the kind that I want some day.

While we think the kitchen one of the most important rooms in the house, the pantry stands next in my estimation. Yet there are people, good and sensible in every way, that would not have pantries in their houses, and such is their privilege in this free country of ours. But for me I should not know how to do without my pantry which I consider very near perfection—I mean the plan of it—for there is in it a place for everything that is kept in such a room. I know of nothing so nice for a covering for the shelves as oilcloth. I prefer the light colored, even white, as it is so easily cleaned. It takes some more time to put it on, with very small tacks or paste, but once on it will last for several years. In regard to furnishing kitchen and pantry, I believe in using the enameled wares on account of their light weight, and let the old iron teakettle and the other heavy utensils be things of the past. There are now so many things in the line of kitchenware that greatly lessen our work. For instance take the covered roaster. How much less attention a roast of any kind needs in this compared to the open pan roast. Just so with the steam cooker, in which you may steam several kinds of food at the same time; it is especially fine for steaming brown bread, and though it needs two or three hours for steaming, the cover need not be removed until ready for browning in the oven, as water can be added through the whistle in the side.

Two other conveniences are fresh in my mind because we have just been using them in taking care of our summer meat—the meat chopper and lard press. The meat chopper is very useful, not only for cutting the sausage meat, but for mince meat, chopping both meat and apples, doing the work of chopping bowl and knife in one-third the time usually required. The lard press we used also in filling the cases with sausage. This machine not only saves work, but saves lard as well, for in rendering thirteen gallons of lard I had a little less than nine pounds of scraps.

There are many things to be had at very little expense, that greatly lighten our work and save time, which is an item of no small importance, especially when we have two days' work that must be accomplished in one. We are seeing the time now when help in the kitchen is out of the question, except for the fortunate few, so I think it a duty that we owe to ourselves and our families to make use of all the conveniences that will save time and strength.

We hear on every hand that this is a wonderful age we are living in, and not many are trying to deny it. And the thought of our neighbors talking to each other, though separated by several miles, is not a wonder to us any more, but even the telephone has some annoying features, particularly when people are called from their afternoon naps, or maybe away from their dinner, for some little, foolish talk; but such is life, and people can not expect to have all the sweet and no bitter mixed with it.

The life of the farmer is surely making advance along with the rest of the world. One of the great blessings that we enjoy is the daily mail, bringing us not only the morning paper but the farm papers with their great variety of information and if all the advice were followed, there would be no other kind of farmers than the "Up-to-Date," and the boys would all stay on the farm, following in the footsteps of their fathers. How gladly would we make the farm and home so attractive to our boys that they would be satisfied to be farmers and consider their calling the most honorable in the world. How long since we first heard of the independent farmer; so called because his crops—corn and weeds alike—are growing, while he is sleeping, and for another reason, I suppose, because he always has employment and is sure of a living, though he must work for it like other people. I believe the time is soon coming when our children will, by proper education and labor saving machinery, be able to do more and better work than we are doing, and in less time. While there are many people that make a perfect mill of their business, grinding out of their lives all that is finest and most productive of happiness, there are others that accomplish just as much and still have time for some of the pleasures that help to make life worth living. So let us welcome the labor saving contrivances that tend to lessen our work, thus giving us more time for intellectual improvement. And while we are thoughtful of the life that now is, let us not be forgetful of that which is to come.

DOUGHS AND BATTERS.

BY S. M. WALKER, PAINESVILLE, O.

[Read at the Farmers' Institute Held at Copopa, Lorain County, December 9 and 10, 1903.]

To the uninitiated the subject of doughs and batters may not seen interesting, but when we consider that bread, rolls, cakes and griddle cakes are some of the foods made from them, the subject begins to offer some attractions.

Under doughs we have, as the most important, bread, which has been used from the earliest times. The first mention we have of it in literature is in Genesis. The Egyptians knew the art of bread making and baked bread in a great variety of forms and flavors. One ancient Greek writer names sixty-two varieties of bread in use and in ancient Rome there were not only many bakeries, but the flour was pounded and sifted to prepare it for use. Bread forms the staple food of a large majority of the Latin races, and often is the only means of subsistence to the very poor. The necessity of having it universal, a food nutritious, palatable and digestible, is obvious.

To fulfill these conditions the flour must be rich in nutrients, the bread light and porous, that it may be easily acted upon by the digestive juices, and the cooking must develop the flavor and render the starch soluble. Wheat produces a nutritious flour, containing all the food principles, although not in ideal proportion, but wheat flour is best adapted for bread making as it contains gluten, the nitrogenous principle of wheat, in the right proportion to make the perfect loaf. Rye ranks next to wheat in importance for bread making, but is best used in connection with wheat. Used alone it makes a heavy, sticky bread, corn used alone makes a crumbly bread, while the combination of the three in equal parts makes genuine Boston brown bread, which has only to be tasted once to be appreciated.

When people first began to grind their grain they did so by simply crushing it between two stones, any two stones which were at hand. Later they kept two flat stones purposely for grinding and very soon they learned to keep one stone stationary while the other was turned about on it. At that time each woman ground the meal for the family. Let us be thankful we did not live then. Afterward came tread mills, then wind mills and later when water wheels came into use all grinding was done by the village miller. From these primitive methods have been gradually evolved the mills of today, covering acres of ground and doing what our ancestors would have considered impossible things with grain.

It is both useful and interesting to know what parts of the grain are most valuable in yielding a nutritious flour capable of making a white, attractive loaf. The body needs the following principal kinds of nutrients: First, the nitrgoenous substances which are represented chiefly in wheat by the cerealin and the gluten. These are tissue building foods, although they also yield energy. Second, the carbohydrates, which are sugar and starch and which serve in the body as fuel, to produce energy, warmth and muscular activity. Third, fats occurring in the germ of the grain; these are valuable to the body as fuel. Fourth, mineral matter, found in the bran, which is valuable as furnishing material for bones and teeth.

We must remember that the food value of any substance is not determined by its chemical composition, but by its digestibility. Therefore, it is well to look into the subject of flour a little. The bran and coloring matter in wheat tend to give a dark, brown appearance to bread which is detrimental to looks at least. For that reason until recently the preference has been given to flour containing the least bran. Within the last few years, however, great stress has been laid on the food value of flour containing the entire wheat grain. Such a flour can not produce a white loaf, and it is a question whether the cerealin can be digested by the human stomach; then, too, the sharp particles of bran are said to irritate the membranes of the digestive tract and so hasten the passage of food through the intestines. Another objection is that the germ, although rich in fat, is of doubtful value in the flour as it makes it dark in color, and the fat is likely to become rancid, thus spoiling the taste. The endosperm, containing the starch, is the most important factor in the flour, for in the starch lies the principal nutrient of the bread. The principal nitrogenous constituent of the wheat is equally necessary. When mixed with water it forms an elastic body which expands under the pressure of gas from the yeast, until the dough is full of gas-filled holes, the tough walls of which prevent the gas from escaping, thus making the dough light.

The so-called hard wheats contain the greater amount of gluten and are made into what is known as bread flour. The soft wheats which contain proportionately more starch and less gluten are made into pastry flour.

In the early days of bread making the sponge was made of flour and water, which, being left a sufficient length of time, would, by a natural process of fermentation, give rise to a light dough. The fermentation was caused by the wild yeasts in the air which fell into the dough. The objection of this method of obtaining yeast was that harmful bacteria and molds, as well as other varieties of yeast, found access to the dough and caused acid fermentation which gave a sour taste to the bread. Today three kinds of yeast are in used for bread making, liquid, either home made or baker's, dry and compressed yeasts. Compressed yeast is in most general use and is a by-product in the manufacture of whiskey. The masses of yeast are skimmed from the surface of the fermenting liquid, sifted, to take out all coarse particles of matter, and washed by adding and drawing off fresh water. Starch is then added, usually potato starch, and the mass is cut in small cakes and wrapped in sterilized tinfoil. One two-cent cake of compressed yeast is said to contain sixty billion yeast cells. The great advantage of this kind of yeast is that it contains fewer species of yeast, and when fresh there are fewer harmful bacteria present than in home-made yeast.

If perfectly pure yeast could be obtained, sour bread would be unknown. Since this is not at present practicable we must guard against the souring of the dough by stopping the fermentation at the right stage and by avoiding too high a temperature which is favorable to the growth of bacteria and deleterious to the best development of the yeast.

Having looked into the subject of flour and yeast let us turn our attention to combining them to make the staff of life in more ways than one. Every experienced housekeeper has her own recipe for making white bread, each one true and tried, and it is not my purpose to interfere with it. There are not many ways of varying white bread, although there are many varieties of rolls, both in flavor and shapes, and there are many ways of making brown bread which give a pleasant variety and are especially acceptable where there are children. Date bread has been very popular with many children I have known and is economical and easily made. The basis of it is warm wheat cereal; any of the fine cereals as cream of wheat, Ralston's breakfast food, wheatlet or parched farinose will answer. Save one cup from breakfast. Warm it and add one-fourth cup brown sugar, one-half teaspoon salt, one tablespoon of butter, one-fourth cake of compressed yeast dissolved in one-fourth cup of luke-warm water, or one-half cup of liquid yeast. Mix all well together, then add flour to knead. Cover and let rise over night. In the morning cut down with a knife and add one cup of dates stoned or cut in pieces, measured after stoning. Put in pan, and when it has doubled its bulk bake fifty minutes in a moderate oven.

Steamed brown bread with raisins added is another bread usually popular with young and old. For raisins when one wants something new and different entire wheat bread to which is added finely chopped hazelnuts, English walnuts or hickorynuts, in the proportion of one-half cup of chopped nut meats to a loaf of bread, will be found good, and I prophesy the experiment once tried will be repeated.

Since yeast thrives best in a temperature of 65 degrees to 70 degrees Fahrenheit, it is wise to keep bread warm during the rising. In cold weather particularly is this true and by setting the dish containing the bread into a pan of very warm water, the rising will be hastened and the bread will be much better than when it rises slowly.

Variety is the spice of life, quite as much or more in the matter of food as anywhere else, and while plain rolls are good no one wants them too often, when to vary them both in shape and kind is simply a matter of forethought. A few gratings of lemon peel one time, a half cup of raisins or currants and a teaspoon of lemon extract another time costs little but thought and the appreciation the thought receives amply repays.

Swedish rolls are usually popular and are very good. To make them the dough, for a medium sized loaf of bread, is rolled to one-fourth inch in thickness and sprinkled with two teaspoons sugar and one-third teaspoon of cinnamon. Over this strew one-third cup of raisins (finely chopped) or currants and two tablespoons of finely chopped citron. Roll up like jelly roll, and cut in one-fourth inch in thickness pieces. Place pieces close together in the pan, flat side down; when they have doubled their bulk bake twenty minutes. The same proportions of fruit, sugar and cinnamon may be used with baking powder biscuit dough, making "pin wheel biscuits."

As all recipes for rolls call for sugar and shortening it is advisable to add both of these to the dough when it is first mixed. Two level tablespoons of lard or butter and one of sugar to dough enough for one medium sized loaf of bread is the rule. Rolls should be fine grained in texture and to obtain this quality the dough may be allowed to rise until it has doubled its bulk, then cut down with a knife, or pushed down with the hand, allowed to rise again and then made into rolls. This sugestion may be followed with bread dough as well as rolls when the bread becomes light before it is convenient to mould it into loaves.

"How do you test the oven for bread?" is a question often asked. There have been many oven thermometers made, none of which have proved satisfactory, or entirely so. The heat of the oven should be great enough to turn a piece of white paper dark brown in six minutes. Bread should begin to brown fifteen minutes after it is put in the oven and should bake from forty to sixty minutes according to the size of the loaves. Rolls require a hotter oven than bread and should begin to brown eight minutes after being put in the oven; the time allowed for their baking is twenty minutes.

Much good bread is made less good—I will not say is spoiled—by being wrapped in a cloth when taken from the oven. Doubtless the reason for wrapping it is to make a soft crust. A better way to do this is to brush the crust with a little melted butter about five minutes before removing the bread from the oven. After it is removed the loaves should be set on edge in such a way that the air may reach all sides of them.

What to do with stale bread is a question in many households. If it is heated in a closely covered pan it becomes almost like new. Rolls baked one day and heated in this way for breakfast are like fresh baked rolls. Dry the broken pieces, but do not brown them, then grind them in the meat chopper and keep in a covered jar for crumbling croquettes, oysters and chops. They can also be used in making scalloped dishes and it is a great convenience not to be obliged to stop and prepare crumbs at the last minute. Bread, dried in the oven till it is brittle and brown all through, is liked by many and is excellent for children.

Few batters are made light by the use of yeast; instead we use cream of tartar and soda, in the proportions of two level teaspoons of cream of tartar and one slightly rounded one of soda; or soda with an acid such as sour milk or cream or baking powder which is (when pure) cream of tartar and soda in definite proportion, with the addition of a small amount of corn starch to prevent chemical action from taking place. All batters made light by any of these agencies should be mixed quickly and baked at once. The most satisfactory method is to sift the dry ingredients and add liquids as quickly as possoble. There are a few simple rules in regard to the use of soda and cream of tartar, soda and an acid, and baking powder which are worth remembering. They are: In using baking powder without eggs, use two level teaspoons of baking powder to each cup of flour. When eggs are used one and a half teaspoons of baking powder to each cup of flour. In substituting baking powder in a recipe which calls for soda and cream of tartar, use twice as much baking powder as the recipe requires of cream of tartar. With thick sour milk use one level teaspoon of soda to each pint of milk. With molasses use one teaspoon of soda to each cup of molasses for batters, as ginger bread. For a stiff dough use one-half teaspoon to a cup of molasses.

Too often, cooks are over generous with soda. An undue amount is objectionable for many reasons. We know it makes food yellow in color and strong in flavor and it also retards digestion. Doughnuts having an excess of soda take up too much fat in frying.

The mixing and baking of cake requires more care and judgment than any other branch of cookery, yet it is the one most frequently attempted by the inexperienced. Cakes are divided into two classes: Those containing butter, as cup and pound cakes, those without butter as sponge and angel cakes. In making any cake three things are necessary for the best results; the best materials, great care in measuring and combining materials, and properly prepared pans and well regulated oven, the cake being carefully watched while baking.

In mixing butter cakes, the butter should be creamed before gradually adding the sugar. When whites and yolks are beaten separately the whites are added last, as is usually the case when the whites alone are used. Cakes can be made fine grained only by long beating, although a small amount of beating will make them light and delicate. When fruit is added to cake it is usually floured to prevent its settling to the bottom; in dark cakes, however, it may be added after the sugar.

I want to give in this place a recipe for a cake which is new to many. It is very simple and when rightly made is delicious. It is called quick cake: One third cup butter, one and a third cups brown sugar, two eggs, one-half cup milk, one-half teaspoon cinnamon, one-half teaspoon of grated nutmeg, one and three-fourths cups flour, three teaspoons baking powder, one-half pound dates stoned and cut in pieces. Put all ingredients in a bowl and heat thoroughly for five minutes. Baked in a loaf pan thirty-five to forty minutes. If the directions are followed this makes a most satisfactory cake, but if the ingredients are added separately the cake will not be a success.

Almost every housekeeper I know has her standby receipe (usually a one egg cake) for every day use.

When custard fillings and all sorts of frostings have been tired out (or have tired the family out), try the following, serving the cake unfrosted:

Melt one square of Baker's chocolate, add to it one-half teaspoon each of pulverized cinnamon, cloves and allspice; add this to a plain cake batter, then add one-half cup of raisins cut in pieces.

Genuine sponge cake and angel's food depend for their lightness upon the amount of air enclosed in the batter and its consequent expansion in baking. In sponge cake the yolks of the eggs should be beaten till thick and lemon colored, then the sugar added gradually and the whites beaten till they are stiff and dry. Sift the flour and salt together and cut and fold in carefully at the last. If the mixture is beaten after the flour is added, much of the work will be undone by breaking the bubbles of air. This rule applies to angel's food as well, and in fact to any mixture made light by air.

There is another batter made light by air which, although not a cake batter, may be spoken of here. Popovers are so easily made and digested and so attractive in appearance, that they deserve to be more popular than they are. The secret of their being sure to "pop," lies in beating in a great amount of air and a hot oven to expand it.

It is a matter of choice as to what fat one uses for greasing cake and bread pans. If butter is used it should be melted and the salt allowed to settle. Dredging cake pans with flour after they have been greased, gives a smooth under surface to the cake which is particularly desirable when the cake is to be iced. Pans lined with paper are equally good for a cake which is not to be iced. Care should be taken that the paper covers the entire bottom of the pan, otherwise the cake batter may run under the paper, making a sandwich cake not to be desired.

In filling cake pans, the batter should be higher in the corners and on the sides than in the middle, then when the cake is baked it will be flat on top.

The baking of cake is more critical than the mixing. Many a good cake has been spoiled in the baking. The oven should be hot enough to turn white paper light brown in five minutes; for small cakes it should be even hotter. Sponge cake does not require as hot an oven as cake made with baking powder, but the heat should be such that the air enclosed in the batter can be gradually heated and the walls of the air bubbles fixed, when the air is fully expanded. Bake in an unbuttered pan, one with a tube through the center is best, and let the cake stand in the inverted pan to cool. Thus suspended, as it were from the pan, the cake will be much lighter than when it is left to hold up its own weight while cooling. Cakes are baked from fifteen minutes to three hours. The heat of the oven should be moderate at first, that the mixture, being evenly heated, may rise throughout. If the oven is too hot at first the cake will crust, or brown over, before it is sufficiently light, then the rising mixture will break through the weakest place, usually the center, and run over the cake. While it is necessary to look at a cake often during the baking, the oven door should be opened and closed carefully; when this precaution is taken there is little danger of the cakes falling at least from jar. Cakes should not be moved in the oven until it has risen to its full height; after this it is often desirable to move it that it may brown evenly. In baking fruit cake, which takes a long time, it is well to steam it for half or three-fourths of the time, then place in the oven to finish cooking. This lessens the danger of burning.

It has been said by some one that the bread used by the inhabitants of any country is a fair measure of their civilization. This might perhaps be applied to other foods as well. If being a good cook is a sign of civilization there certainly are many highly civilized women in the land, and let us see to it that the rising generation are as civilized as their mothers.

WHICH FIRST, THE CHILD OR THE FARM?

BY JOSEPHINE M'VEY, LEESBURG, OHIO.

[Read at the Farmers' Institute Held at Leesburg, Highland County, January 18 and 19, 1904.]

It is far from our purpose to depreciate the value of a skillful system of farming on the moral training of a child—indeed the contrary. If "bad manners are bad morals" then there is at least a remote connection between bad farming and bad morals. As clean beautiful lawns and clear sparkling fountains have a refining influence, so filthy weeds and muddy ponds have a demoralizing effect. If untidy dress and slovenly demeanor reveal a bad inner as well as outer condition, does not a willfully neglected farm reveal something of a like inner condition?

Witness the testimony of a man of wisdom. "I went by the field of the slothful and by the vineyard of the man void of understanding: And lo, it was all grown over with thorns, and nettles had covered the face thereof, and the stone wall thereof was broken down. Then I saw and considered it well; I looked upon it and received instruction. So shall thy poverty come as a robber, and thy want as an armed man." From the punishment visited upon him it is clear that doing nothing is doing wickedness, and like all other forms of evil, it affects more than the guilty person.

Witness now the testimony of a modern moralist. He says, "I was raised in the vicinity of a lazy worthless farmer; his fences, half broken down, were covered with vines, briars and thistles; his corn, pale and weakly, was trying to fight its way through the weeds, his unsightly buildings gradually succumbing to their fate; his entire premises covered with burdock, jimson weeds, hog weeds, mallard and such like cottage brigands, all extending their fat lazy leaves, without the least fear of molestation. I hardly know which was the most demoralizing on my youthful character, this, or a very profane, though industrious man who lives near by."

But with due credit to the helpful effect of good farming on the character of a child, it does not affect him as do his associates, his toys, his teaching, and his reading.

Now if a fine character is more important than a fine farm, is it wisdom to consume so much time on the latter and so little on the former? Which do you think will take the better care of parents in old age, children with big hearts or children with big farms and little hearts? Children who have a have a great deal of love for them or children who have a great deal of love for their money, and but little love or them? In proportion as a child's love for money increases his love for his parents decreases. I mean when greed takes the place of need, and money is made an end instead of a means to a higher end. It is largely in the power of the parent to choose in this matter; and "Whatsoever a man soweth, that shall he also reap."

There is perhaps no parent who does not think infinitely more of his child than of his horse; as the death of either will prove. There is perhaps no farmer who would not infinitely rather lose all his crops, his farm included, than lose his child. Yet in spite of this inherent affection, do not parents often act as if their duty ended with simply supplying food, raiment and shelter for the child, leaving his physical, mental and moral training largely to himself?

To be sure, child training can be overdone as well as underdone, and perhaps with as much injury. The best way to help poor people is to help them to help themselves; and the best way to train a child is to train him to train himself. Indeed if you fail to do this you can no more force training into him than you can force an education or profession into him. When a child is made to want to farm, to want to learn a profession, to want an education, then direction and instruction are largely all that are needed. This can be done by keeping before his mind the pleasure and satisfaction that good farming, success in a profession or an education will give him. Likewise when the pleasure and satisfaction of a clean moral and spiritual life are kept before the child (together with the misery of their opposites,) till the child really wants a moral and spiritual training, then direction and instruction are practically all that are needed; and unless such a desire can be created such training can never be forced.

Nor are despotic demands and unquestionable obedience the ultimatum of child training; but he should be taught to do right because it is right, then when the parental restraint is not present he will naturally yield to the demands of right, guided by his sense of justice.

However, before the child has reached the age when he can reason for himself he must be guided by the reason of another. The importance of the first few years in the training of a child so much dwelt upon has never been overstated, nor to any degree appreciated by the masses, at least. If we admit it to be a difficult thing to train up the average child "in the way he should go," how much greater is the difficulty later in life. Yet how often do we find parents who really intend well for their children overlooking the importance of this early age, and giving their time and attention to laying up means for the education of their children when they are older. This is not unimportant; this they should do, but under no consideration leave the other undone. Would not some of that means be more wisely spent employing help for the mother, while she devotes a share of her time to the children? For washing, ironing, sweeping and cooking is work that can be transferred to another, but parental child training cannot be so transferred.

One mother with a family of children said to me, "I have scarcely any time to sit down with my children and talk with them and read to them. I know I shall regret the way I am doing when they are grown, but we are in debt for the farm, and I feel that I cannot afford to hire help." Can any mother afford to continue in a thing which she is convinced will bring untold loss to her children and regret to herself in her old age? Would it not be better to take time for the children, even if the house is not kept as tidy as she would like, or her chickens and garden see her less often when either must be neglected?

Another mother with several children said, "I regret having so little time to read to my children, but my work keeps me busy all day long and at night before I get through the children are asleep." In a few years the children will be grown up and the opportunity gone. To be sure the farm will be paid for, and quite a sum of money laid up, but does this compensate for the loss sustained by the children? And like the children of the virtuous woman of scripture will they "rise up and call her blessed?" Does the parent owe the child a farm more than a rightful amount of time and teaching?

Which does the world need most—men and women who are selfish, grasping and whose every desire centers in themselves or men and women who have been taught that "man does not live by bread alone?"

Little as is the time spent directly with the children, how much less do most parents spend in reading works devoted to child training? We have our farm papers, stock papers, papers on poultry raising and gardening; but how many take magazines or papers on the science and art of child training? From our own post-office as nearly as we could ascertain, there are about three hundred farm and stock papers sent out, and only three copies of any magazine devoted entirely to child training. Now giving all due credit to farm and stock papers and making due allowance for mothers' departments in other papers, I ask if any man or woman of sense considers three hundred stock papers against three child papers a compliment to our community.

The farm affords a wonderful opportunity in the training of children which other vocations lack; such as teaching kindness to dumb animals, lessons in beauty and harmony in nature, lessons in thrift and industry from the bees, ants and birds. Good farming and good child training should go hand in hand and neither be sacrificed to the other. Remember the time of child life flies fast like an arrow and its opportunities return no more forever and "what thou doest do quickly."

THE COUNTRY BOY.

BY J. G. MONROE, DAYTON, OHIO.

[Read at the Farmers' Institute Held at Brookville, Montgomery County, February 17 and 18, 1904.]

My experience leads me to believe and to assert my belief that the country boy, simply because he is a country boy, has a greater capacity for scholarship and for business than has the city boy. Of course I am speaking not of individuals, but of classes. I mean one born of intelligent country parents and country ancestry, educated in the country school, passed to the high school where he completes the course, meanwhile spending his vacations on the farm. Having graduated from the high school, he goes to college and again spends his vacations on the farm. Graduating from college he passes either into the professional schools of the university or to an apprenticeship in some commercial line. Emerging in a few years from the professional schools or from his commercial apprenticeship, we have our finished country boy anxious for worlds to conquer. The type of city boy I have in mind is one born in a city or a large village, large enough to remove him from all influences of the country or rural hamlet; born of intelligent city parents and city ancestry, educated in the city public and high school and passed on into the college; when graduated from college, he too enters either the professional schools of the university or upon an apprenticeship in some commercial line. Emerging in a few years from the professional schools or from his commercial apprenticeship, we have our finished city boy looking about for foemen worthy of his steel.

Give me one hundred such country boys as I have defined that I may speak of them collectively, and for the same reason one hundred such city boys as I have defined. These one hundred country boys I place over against the one hundred city boys and affirm of them that in school and in college the country boy has greater capacity for scholarship, gains a better and broader education while in school and college, and in after years outstrips the city boy in professional and business success.

Before attempting to show the causes for the merits here claimed for the country boy, let me introduce evidences in support of the claim itself. A recent canvass of one of our large eastern cities showed that 94 per cent. of its leading citizens were brought up on a farm. An examination of one hundred commercial and representative men of Chicago showed that 85 per cent. were reared in the country and rural villages. Seventeen of our twenty-five presidents came from the farm. The census of colleges shows that the rural districts and villages are furnishing over three-quarters of our college students.

The National Council of Education in session at Denver, Colorado, July 9, 1895, appointed the famous Committee of Twelve to report on rural schools; for such an educational duty only men of national and international reputation were appointed. At the first session of the committee, some member said, "Now that we have been appointed to outline and advise for the rural schools of the United States, will those members of this committee who were born on a farm and are themselves the product of the rural schools please rise?" What a glorious tribute to the country boy when it is said that every man of the twelve stood in response.

In a somewhat recent book, published by Funk & Wagnalls and entitled "Successful Men of To-day," the author makes certain observations on "Success," from interviews with five hundred men of distinguished achievement. In the appendix he prints in full one hundred and thirteen replies received in answer to a list of questions asked by him, as many of the five hundred interviews mentioned were secured in this way. This list of one hundred and thirteen is comprised of men whose names are household words, and represents in about equal numbers college presidents, jurists, statesmen, lawyers, doctors, journalists, editors, merchants, manufacturers, bank presidents and men of miscellaneous affairs. I made observation from the answers given and find that three do not tell where they were born, sixty-eight were born and brought up on a farm and twenty-eight in small villages, leaving only a possible seventeen of city birth and bringing-up, about 15 per cent. of city origin.

Some ten years ago I purchased a then new book entitled "The World's Living Leaders." The book is well written and gives photographs and biographies of the Napoleons of the railroad, the stock exchange, the bench, the bar, the pulpit, the pen, the press, the halls of legislature, the wards of the hospital, and the workshop of the inventor. In the book one hundred and nine leaders are presented; fifty of these are American born, the remainder living in Europe. Of these fifty the birthplace of eight is not stated, twenty-one are country born and farm reared, nine more are from small villages, making those of known rural origin 60 per cent. of the whole.

Some two years ago while seriously investigating this subject for myself, and before being in possession of the information already given, I took occasion to address a circular letter to the prominent business and professional men of my own town. The circular required answers to set questions. I received sixty-one replies. Thirty-nine of the sixty-one were of country birth, and twelve more considered their bringing up a rural village one, while only nine reported being born of parents neither of whom were reared on a farm. To the question, How many looking back from their present experience would direct their lot under city influence, were they to become children again? only twelve replied in the affirmative.

For nine years, in Michigan and Indiana, I met rural diploma pupils in city high school work as they mixed with our own town pupils. These pupils entered our city high schools on their eighth grade rural diplomas. During these years I taught from two to three high school classes daily. All the teachers were unanimous in acknowledging the superior strength and scholarship of the rural pupils taken as a whole, especially when they reached the upper grades of the course. During the freshman year they were at a slight disadvantage, lacking as rounded and technical a preparation as the city pupils have received, but this they soon outgrew. Other city schools throughout the states mentioned had a similar experience.

In my search for the cause of the superiority of the rural pupils, I examined the subject from every side that might lead to the truth. Inquiries similar to the following were considered: Is it because the country boy applies himself better, being away from home and acquaintances? Or is it because these pupils are the pick of the country, the dull ones staying at home while our own poor we have with us always? Or is it because the country pupil counts the cost of being away from home and so works the harder? Or is it for other causes than these, or for any or all of them combined? Or is it purely and simply because he is a country boy? This leads me to my opening assertion: I believe the last named is the cause, that he has greater capacity simply because he is a country product. If this be truth, there are reasons for it, and reasons that are scientific. Let us now consider the causes accounting for the claims set up in favor of the rural boy:

First, the country boy is brought up face to face with nature. This means much in rendering the senses keen and discriminating. In this respect the stimulus of rural life is incomparable, compared to which city life is a dearth. Whittier speaks of the child looking upon the world as a Chinese puzzle to unravel; and in his poem, "The Barefoot Boy," the poet shows how the country boy has the key to this enchanting toy. Whittier's Barefoot Boy is a country boy, and note how he unravels the mysteries of his world of nature. With "Health that mocks the doctor's rules, he has 'knowledge never learned of schools,' knowledge

"Of the wild bee's morning chase,
Of the wild flower's time and place,

Flight of fowl and habitude
Of the tenants of the wood;
How the tortoise bears his shell,
How the woodchuck digs his cell,
How the ground mole sinks his well;
How the robin feeds her young,
How the oriole's nest is hung;
Where the whitest lilies blow,
Where the freshest berries grow,
Where the ground nut trails its vine,
Where the wood grape's cluster shine;
Of the black wasp's cunning way
Mason of his walls of clay,
And the architectural plans
Of gray hornet artisans.
For eschewing books and tasks,
Nature answers all he asks;
Hand in hand with her he walks,
Face to face with her he talks,
Part and parcel of her joy,—
Blessings on the barefoot boy!"

The poet is calling attention to the keen perception and observation of the country boy, as developed through the incomparable stimuli of his natural environment. One reason why some uneducated men are so successful in business is because they are such excellent observers; moving about in the busy world, they learn facts at first hand. The head of a large firm, when asked why ..e employed such an ignorant man for a buyer, replied: "It is true that our buyer cannot spell correctly, and he has probably never read a book through, but when anything comes within range of his eyes, he sees all there is to be seen. He buys over a million dollars' worth a year for us, and I cannot recall any instance when he failed to notice a defect in any line of goods, or any feature which would be likely to render them unsalable."

In the second place the country boy is brought up having work to do from his earliest years, personal responsibility is imposed upon him, and he must needs be equal to the responsibility thus imposed, for his daily duties are of such a character that they cannot be neglected without serious consequences resulting. He thus learns the great lesson of labor, patient, continuous labor, and he early feels that he is a participator in the great world's work. Look for a moment at the character of his labor. Speaking of it some one has fittingly said, "The stubborn sward is turned over by his plowshare, and the earth made to contribute to his necessities. That proud monarch of the forest is leveled by his ax and ministers to his comfort. That obstreperous calf, in time, tamely submits to his guidance. That wild, turbulent colt is finally curbed by his master hand and yields to his superior will." All these give him glimpses that man was born to rule.

Then too the farmer boy's work calls for the daily meeting of emergencies, so much so that there is nothing of monotony in his daily routine. Dr. G. Stanley Hall declares that the farmer boy learns about seventy different industries. Surely there is no monotony in that. Concerning the meeting of emergencies in his daily work it is thus well voiced by another: "He must meet and overcome daily the severest tests upon his ingenuity and skill. Follow his varied experiences for even a day, and see the emergencies that confront him. He begins plowing, but the plow penetrates too deeply into the soil, so he must stop and carefully adjust the plow-beam. The mold board is rusty, and he greases it with a piece of bacon. The plow strikes a stone or other obstruction and he receives a terrific thump in the ribs from the plow handles. The plow strikes another obstruction and the harness breaks. He must mend the broken harness with insufficient tools and materials. One of his horses becomes chafed under the collar, and he must devise some way of relieving the pressure on the chafed shoulder. He plows up a bumblebees' nest and narrowly averts a runaway. He breaks a whiffletree, and with an ax and a draw knife makes another to take its place. So, at every turn, he is required to make ingenious shifts, working as he does without adequate tools and materials. Under these circumstances, where he must think and act, act and think, he becomes resourceful, and master of almost any situation or emergency that may confront him." Compare this with the artificial life of the city bred boy. Nothing to do is the Waterloo of the city boy's life.

The third reason among the favoring causes of the country boy's efficiency is that he is brought up less spoiled by luxury. It has been largely granted him in his surroundings not to be led into temptations that generally surround the city boy.

A fourth reason for the rural boy's supremacy is found in heredity and in the evolution of country birth. I remark that the city boy's father is either an unskilled laborer, an artisan, or a business or professional man. "Like father, like son," is the law of heredity when enviroment and other forces are left out. Now there is nothing in the calling of the unskilled laborer, and but little in that of the artisan that would tend to endow his offspring with superior talent and capacity. But there is much in the daily life of the business and professional man to nurture in him superior instincts and capabilities which through birth would be handed down to his son. Unless other evil tendencies come in to mar, we can truthfully and scientifically say, blest in mental heritage above his fellows is that city boy whose father is a successful business or professional man.

But all farmers' sons are born of business men, for the farmer is a business man. Every farmer is the manager of a business plant. He is laborer, artisan, and business man combined. His hand executes what his brain conceives; and he notes results and experiments again, to gain or to lose according to the efficiency or inefficiency of his plan and execution. His life is a constant effort to curtail expense and multiply productiveness. He strives to make two blades of grass grow this year where but one consented to grow last year. He studies to know when it is better to raise sheep than horses, when horses than sheep. He has rotation of crops and adaptibility of soil to study and he has the markets to watch, that he may sell the products of his brain and hand to best advantage. Surely the sons born of such an occupied father, who himself is the descendant of a long line of ancestors, inherits as a mental birthright a capacity for success.

Then too the country boy's mother is a business woman. In addition to her kitchen economy, the farmer's wife has her commercial department on the farm, having her accounts and considering carefully her gains and losses. Thus the rural boys are born of parents both of whom are engaged in commercial activities, these parents themselves coming from a long line of such ancestry. What a heritage the country boy thus receives. Oliver Wendell Holmes says that the time to begin the education of a child is a hundred years before the child is born. The same thought is in the mind of a recent writer on "Successful Men" when he says that the most important thing to insure one's success is a good grandmother. But where, let me ask, is there so fitting a place to raise good grandmothers as on the farm?

These are the principal reasons accounting for the rural boy's superior strength. To them might be added purer air and a physically quieter surrounding than the city boy enjoys. A strong body is needed for a strong mind and a strong activity. The pure air and quiet of rural life gives to the country boy this advantage.

OUR FARMER GIRLS.

BY MISS SHIRLEY FAWCETT, ZANESFIELD, OHIO.

[Read at the Farmers' Institute Held at Bellefontaine, Logan County, December 11 and 12, 1903.]

How often in these times do we hear discussed at length the outlook for the farmer's boy, and while his future is painted in glowing colors, while his advantages and possibilities are discussed from every standpoint, shall we not take a little time for the consideration of the outlook for that other most interesting and essential resident of the farm, the farmer's girl? Should we judge her future by her past I am of the opinion that the outlook might not be such a pleasing one as if it be judged by her present; because every one knows that in the olden time her opportunities in any line beside that of housekeeping were exceedingly few and far between. We do not mean to insinuate that her true worth at that time was considered any the less on account of this, for those sturdy, fearless pioneer girls made royal home-makers, but we do mean that when she had mastered this very common, although most essential branch of learning, it was deemed she knew enough and nothing more was expected of her, so whatever inclination she may have had to be equal intellectually with her brother who spent the long winter evenings poring over what few books he had, she bravely put down and only made her knitting needles fly the faster, if that were possible. But why should she not receive equal consideration with the son—she who toiled as earnestly and unceasingly as he? Why was it that to him fell the choicest gifts the household had to offer? Why was it that on him the father's eye turned with pride, why were his wishes considered first, his wants supplied in such measure as was possible and finally to him was left what little store the parents had managed to accumulate?

There came a time when her longings and aspirations refused to be ignored any longer and she was permitted to attend the country schools provided she did her usual amount of work in the home, so her efforts were redoubled to accomplish now that which had taken all of her time before, and still be enabled to devote a little time to her school books; and although she seldom could manage to attend very regularly, she was by no means the slowest in the school; indeed the girls rarely failed to stand at the head of their classes. These little excursions to the land of knowledge only kindled her desire for higher intellectual development, but her parents would have been aghast had she suggested to them any such thing as a desire for a college education; indeed it was a very rare thing in those days for even the farmer's boy to secure an opportunity of resting his eyes upon a college or university building. As times advanced, however, the higher education was possible for one sex as well as the other, and so we find the farmer's girl of today with this advantage.

Since there have been marvelous strides in the world of invention—the outgrowth of advancement in educational lines—the farmer's daughter of the present is not required to help manufacture the clothing material for her father's family, but she is still none the less busy in her home life; for now her powers and faculties have so wonderfully developed that she finds no idle moments in her life. Where her great-grandmother in her girlhood or womanhood knew practically nothing of business ways and customs, we find her, owing to her training in that capacity, fully as competent in such matters as her father or brother, and indeed in some cases their superior. Had you asked the farmer's daughter of seventy-five or fifty years ago the simplest question concerning govermental affairs, in ninety-nine cases out of one hundred, she could not have told you. But what change have we today? She can give you probably accurate information concerning almost all customs of government, can inform you in regard to the most important of our laws, and is in touch with the latest important happenings at the capital and all over the world. And what has brought about this change? Her study of civics has thoroughly informed her as to our modes of government, and the literature which we can so easily secure today in the way of reliable papers and magazines keeps her in touch with the latest current events. Does all this render her any the less a true daughter of the farm? Never! Her recognized ability in matters pertaining to the best interests of the farm have caused a closer companionship between brother and sister than formerly, and if her judgment of good stock sometimes proves superior to his, if her ability in managing a horse or some animal of the farm is equal to, or sometimes more availing than his, does she not deserve a just amount of credit for it?

She is perfectly capable of managing affairs in the absence of the boys or her father—that is, if she is a true daughter of the farm, as all of us should be—and in many cases can take their place as competently as any man, but of course there are a great many kinds of farm work which even a strong, perfectly healthy girl does not have sufficient physical strength to do.

Besides all this, owing to her excellent situation, she is possessed of quite a considerable knowledge concerning bird, insect, and plant life, and it is no mean accomplishment to be able to name at sight the different kinds of native birds, to be informed as to their habits, to know the different nests when found on the ground, in the bushes and in the trees. And even more varied are the specimens she finds belonging to the family of insects. Some are harmless so far as she knows, but many by careful study and observation she finds to be greatly injurious to the crops; so, while she loves the beautiful, harmless butterflies, she cannot find so much love in her heart for the greedy chinch bug, which takes unto itself sometimes the greater share of the corn. Then the many, many different species of plant life which are everywhere to be found, on the hills, in the forest, by the brooks, and in the valleys, afford her a never ending source for thought and study.

To be added to her outdoor accomplishments comes the handling of shotgun or rifle, and she is a marksman of no mean ability. While her love for the innocent, harmless creatures of wood and field will not permit her to destroy them, yet she has no mercy for the thieving hawks which are constantly trying to carry off her poultry; for the robber crows which destroy the eggs; the sly fox watching for the fat young lambs and for the many others with which we are all familiar, and all equally anxious to destroy.

And despite the story which was started at one time by some very ignorant man, that a woman can never hit a nail on the head twice in succession, the typical farmer's daughter can use saw, hammer and nails quite frequently to her advantage about the house, among the plants and vines on the lawn, in the poultry yard, and in various places where she needs them.

And still for all this does she neglect her domestic training? To be sure she does not! She is an accomplished dairy woman and is successful with her poultry raising; her success in the kitchen has been such that she has received from the family the very comforting assurance that her cooking is almost as good as mother's; can very handily use her needle in all the common sewing, and quite often is capable of doing that which we consider fine sewing, as well.

Besides these household duties, at evening when all the family are together after the hard day's labor, she can cheer their tired hearts by music and song, for there is scarcely a homestead in these days but can boast of one musical instrument at least and ofttimes more; and owing to her taste for things which are simple yet refined she can make the home more and more beautiful and attractive and delights in doing it.

So when we compare the deep-minded, business-like, cheery, thorough going farmer's daughter of the present with her of the past, when we note the wonderful improvement in so many lines and retrogression in none, when we observe that her development is still constantly progressing with apparently as much yet to be accomplished as has been done in the past, what may we not expect the future to bring forth. Shall we not hope to find a type of true womanhood perfected in the farmer's daughter of the future? With this aim in view, with our eyes raised to this as the object of our lives, let us each day strive to better ourselves in some way; let us ever be watchful for the good we can find in those about us, careful to select this good to help us in the building of our own characters, able to cast aside that which is unfit to enter into the life of a true and noble woman. Always with the best interests of the farm—our nome—at heart, have we not reason to expect that in some not far distant future day the country girl shall be known and revered at her true value, and all souls may be made to feel in spirit as did our beloved Quaker poet when he sang:

"Where'er the wide old kitchen hearth
Sends up its smoky curls,
Who will not thank the kindly earth
And bless our farmer girls!"

THE RELATION OF RURAL SCHOOLS TO COUNTRY LIFE.

BY W. C. PEIRCE, TROY, O.

[Read at the Farmers' Institute Held at Bethel, Miami County, January 1 and 2, 1904.]

History is made up of reforms and relapses. An inspiration comes to an individual, his mind is turned to new fields, new thoughts begin to develop which crystallize into a principle, shaping and guiding his life. Other lives, governed by the same principle, come in contact with his and from this contact grows an institution. To promulgate the principle, plans and methods of work must be adopted. These in the beginning are crude; as time moves on attention is given to their improvement and development, but as minds are taxed for the development of methods, they lose sight of the principle, the original spring of action.

In a few generations methods may reach the acme of perfection and yet the real motive that actuated the founders of the institution be lost from sight. We hear a statesman calling for a return to the principles of the forefathers and men begin turning to the archives of the nation to learn what motives did inspire the founders of the republic. A minister sets forth the tenets of his church and to most of his congregation they are unfamiliar;

the leaders of rural thought are beginning to teach the primitive gospel of agriculture, to the average farmer it is a revelation. With the latest and best improved methods he is familiar, the real principles which underlie farm life come to his mind as something new. Schools are no exception to the rule; they are human institutions, the rule of reform and relapse is universal. The art of teaching has made wonderful advance, but the spirit should not be quenched by the method. True education is a training of the mind to act through the eye and the hand, thus preparing for useful service in life.

In direct ratio to the skill and efficiency of the training is the pupil's ability to successfully pass through the conflicts in which he finds himself upon leaving the schoolroom. If a child is crammed merely to make him pass examinations and move on from one grade to another, he may pass from his rural school on through high school and college and yet be as helpless as a lost sheep in the great world outside the class room. There is a vast difference between a stuffed head and a trained intellect. It is not the boy who leaves school with his memory crowded with facts, but the one whose mind has been disciplined and trained for exploits that is of value to his community.

Utility should be the test applied to every branch of study. Everything should be eliminated that will not help the pupil to make himself felt as a factor in the advance of life in his community. When a study is pursued for a short time simply because it is in the curriculum and the pupil must make a passing grade, if it has no connection with the life to follow it is straightway forgotten. Abandoned tracks are left in the brain and the mental power and energy have been impaired instead of strengthened.

The time was when the current of human affairs was more sluggish. Education was deemed necessary only for the few. Leisure was abundant. The student spent years familiarizing himself with the literature of the ancients before turning to the problems of his own time. With education made popular the demand came for making it practical. The merchant or manufacturer cared little whether his son studied the dead languages or not, but he did have an earnest desire that he be able to succeed in business. Teaching has largely conformed to the requirements of his demands.

With the farmer it was different. Land was plentiful and productive. The slackest farming still brought profitable returns. As farms became depleted and profits grew meagre, education was looked to as the remedy. Agricultural colleges and experiment stations were established. These are accomplishing much, but thus far our common schools in the country have done very little toward the introduction of instruction which will directly bear upon agriculture. Education forms the common mind. The national trend of thought is an index to the character of instruction given the youth.

Americans are looked upon by the world as a great commercial people. True, they are. There is not a market under the sun where American goods may not be found. In every nook and corner of the whole earth there are evidences of the push and energy which characterize American merchants and manufacturers. American plows turn the soil of Australia. American canned meats go to feed the British army in India. The whistle of American engines awakes the echoes among the musty tombs of the far East, American bridges span the rivers of Africa, the news of the world is flashed from continent to continent upon the magnetic strings of American invention. No wonder the world stands gaping and amazed as it watches the rapidity of our commercial progress.

Yet the corn crop, alone, of the United States far exceeds in value the combined output of all her factories. We yearly buy of foreign countries more manufactured products than we sell abroad. Farm products yearly make up the deficit and more, leaving the balance of trade in our favor. American commercialism is at present playing before the footlights in the theater of the world, but back of all this pageantry is American agriculture, the bone and sinew of the nation.

No one is prouder of our commercial achievements than I. Care should be taken, however, lest commercial zeal should impair the more vital and substantial life of our people. For the best interests of the future the bright minds of the rising generation should be pointed to the fields as well as to the countingroom. Schools should not separate the thought of the child from the life with which he is surrounded. It is eminently fitting that the boy reared amid the rush and bustle of a great city should have held before him an honest and successful commercial career as a goal toward which to strive. It is equally fitting that the country bred boy should have the life of the industrious successful farmer held before him as an ideal.

Now the questions come. Are our rural schools as successful as they should be in implanting in the minds of the children the high ideals of farm life? Are the boys and girls of our homes, as a rule, imbued with the spirit of the country? Is there not among the youth in most communities an evident discontent, if not a positive aversion, to farm life?

There are exceptions, of course. Some boys have such a strong natural affinity for the soil and are so filled with the spirit of country living that they make successful farmers in spite of a misdirected education. A large percentage of our sons and daughters will remain on the farm, contented or otherwise.

Many who go to the city see their dreams fade away. What they thought were to be positions prove only jobs. The young man with brains enough to run a four hundred-acre farm spends his life measuring calico or weighing out sugar. The young woman fit to be the queen of a country home hammers away on a typewriter.

Granted that the country school must be one of the main factors in dispelling the clouds of discontent and bringing about correct ideas, how may it be made to take a deeper hold on rural life? How may the school life supplement and enrich the home life?

The first essential is co-operation of parent and teacher. It is the imperative duty of parents to keep pace with the methods and work of the schools through actual contact with the schools and teachers. Every worthy teacher is glad to talk over plans and methods with the parents of the children. He should understand as far as possible the conditions in the homes. The real value of a school depends in a very great measure upon the efficiency of the teacher. In fact, the teacher is of far greater importance than the text, for the right teacher uses the text only as a starting point, a concrete something upon which the child may stand as he gazes around upon the world of real life and action. The teacher whose mind is locked between the lids of the text book, who cannot inspire interest in the subject he is teaching, should be put at some other work. It is useless to attempt to teach a boy the details of any subject without first inspiring an interest in the subject itself. Given the inspiration and an opportunity he will master the details without a teacher.

Rules are less important than principles. It would be the height of folly for the farmers of the Miami valley to adopt the same rules and practices that are applicable to the agriculture of Florida. So in regard to education. As long as we attempt to rely entirely upon the rules laid down for city schools and ignore the peculiar elements which underly the lives of children whose homes are maintained by the tilling of the soil, much of the energy expended in the rural schools will be lost.

No one would ask for the introduction of an extended course in the science of farming into the already crowded curriculum. Such a thing is impossible as well as undesirable. Farming is so complex in its nature and includes so many sciences it furnishes a study for years for a mature brain, yet as practical education has been the vitalizing force revolutionizing the commercial and professional callings, why not make the instruction in the rural schools more practical, that the uplifting power of education may be applied to the forty million of people that are dependent upon this, the most ancient of occupations?

There is no occupation open to our youth with better promises for financial success than farming. Social opportunities are not lacking. The richness of home life on the farmstead is limited only by the individual taste and ability. Why then should we not dispense with the text books that are stamped with the traditions of workshop and store and use instead books that do not ignore the actual life for which country children should be in formed and trained?

It is true, perhaps, that our school readers are more interesting and better adapted to the capabilities of the child than they once were, yet there is abundant room for further improvement. I find children today conning over the same old selections and getting about as little sense or training out of them as did we of twenty years ago. I am inclined to think that the old fable of the mill that rests on the bottom of the sea and grinds "salt, salt, nothing but salt," is no more interesting to the children than would be the true story of how soil is formed or how plants are distributed. Such subjects as these would assist in awakening in the child mind an interest that would be carried home from school.

Learning should begin at home; while the geography class studies the mountains and rivers of Europe let us teach it the formation of the hills and the action of the rivulets of its own district. Instead of giving preference to the products of Chili and Brazil, let us help it to trace the products of its own community to their final destination. Show how the corn grown on the home farm helps to furnish the power to carry on the business of New York, and you have awakened an interest in commercial geography that will not stop with school days.

The study of history should be so conducted that the boys and girls would comprehend the fact that we are primarily an agricultural people, and understand the part that agriculture has played in making this nation a great world power. At the outbreak of the Spanish-American War I heard a mother rejoicing because her son was too young to enlist. "He has always been enthusiastic about war; he always loved the study of history," she said. To that boy the history of his country is but a recounting of her battles; but history is something more than this. All honor to the men that fought for our independence and to preserve the Union. I would not erase a word of praise that is written of them, but it is the victories of peace that make a nation great. America's plows have won greater victories than America's sword. Her valiant sons have done more on her fertile farms to make her rich and powerful than they ever could have done on the field of battle.

From the arithmetic might well be eliminated a few subjects such as "Foreign Exchange," "Customs" and "Bankruptcy" to make room for a few pages of practical agricultural arithmetic.

More attention should be paid to English composition, that the future farmers may not be handicapped by a lack of ability to speak and write clearly.

A right point of view should be required in all branches taught. Proper forms of nature study should be introduced. In these the ethical and practical should go hand in hand. The pleasures and cultural opportunities of country living should be made prominent by a constant endeavor to interest the child in the common things about him; at the same time with equal earnestness should the dignity and profit of intelligent farming be emphasized.

To know the plants of the neighborhood and their economic value is of more use to the average child than to know the products of the Chinese Empire. To know the origin and characteristics of the soils of the locality is of vastly more importance than to be able to describe the lakes of Africa.

In this rushing, whirring age of electricity men and institutions must advance rapidly or drift from the current of life into stagnant pools. To modernize instruction in the rural schools and place them abreast of the times, to inspire a working interest in educational affairs among country folk, to impress upon teachers and makers of text books the necessity of adapting instruction to life in the country, to harmonize the home life and school life that the same ideals may be held up by both parent and teacher, to put an end to the absurd idea that education is needed in mercantile but not in agricultural pursuits, to check the growth of discontent among country youth by instilling a love of nature and joy of country living, to develop the latent possibilities of applied science in farming, these are tasks well worth our best efforts.

CENTRALIZATION OF COUNTRY SCHOOLS.

BY M. G. SLAGLE, BUCYRUS, O.

[Read at the Farmers' Institute Held at Bucyrus, Crawford County, February 5 and 6, 1904.]

The greatest problem that confronts us as a people of the rural districts today is how we can best educate the children who in a few years more will be the rulers of our vast nation. In nearly all states liberal appropriations have been made, or are being made, by boards of education for buildings, equipment, and teachers in the country schools; all sorts of "material," consisting of charts on each branch taught, globes with some equipments, mensuration blocks, etc., have been purchased with no thoughtful examination by any one duly qualified, the boards of education having been played on in many instances by some rogue who had no interest in the work of education but only in his own financial gain. Also new subdistricts have been created and good roads built. All of these things have been done in order that there shall be good schools near the people who support them.

In many townships we find almost all grades, from the elementary to the higher grammar grades, all under one teacher, who is supposed to give daily instructions in all branches that are required by law. But it is not within the power of one man or woman to take a school of forty-five pupils, more or less, divide them into eight grades, teach the branches required by law, slight no classes and do justice to the branches taught, to teacher or to pupils. If this is impossible in a school where classes may be large enough to encourage rivalry, much more is it true in a school of from fifteen down to eight, in which the classes number one or two pupils each and probably never more than five.

Not only is it desirable to have numbers sufficient for rivalry, but it is absolutely necessary to have time to teach a class, whether it be composed of one or twenty.

For these very reasons the pupils lack interest and grow careless in the country schools. Then many ambitious parents who have the welfare of their children at heart will move, or at least send their children to some city or town to better their educational advantages. So then, when parents assign as a reason for moving or sending their children to a city that they wish to secure greater and better educational advantages, does it mean that the city is affording and supporting what the country cannot? Does the city provide the most natural conditions under which a child is to be educated? Is there to be found in the city the great variety in nature with each change of season or any of the choicest scenes in which the rural inhabitant finds so much real joy, beauty and delight? I emphatically say, no. But it is on account of the better equipment, more qualified teachers and the greater number of minds they come in contact with, and not the surroundings of city life, which have a tendency to draw down instead of lifting up.

We can readily see that if we had the same educational advantages in the country as we have in the cities we would be nearer the top round of the ladder of perfection; and this is what centralization of country schools would give us. Why do we not try to have centralization?

As I have said, it is not entirely the fault of the teachers that the country school pupils have not made as rapid advance as the pupils of the graded schools, for it is true that many of our good city teachers are the teachers who made starts in the country districts; but even with expert teachers at the head of these country schools, they are not fitted for bringing out the best that is in a pupil. How many of our boys and girls fall by the wayside for the lack of a proper stimulus! Show me a teacher in the country schools of this county today who has the satisfaction of knowing that he is doing the work as well as he wishes to do it, or one who is accomplishing all that he cares to accomplish. Therefore, I feel safe in saying that no subject of such vast importance as to educational value has ever presented itself to the people of the rural districts of this county as that of centralization of township schools. No gift can be offered to the country scholar which can compare with it. Who does not know that in offering advantages to the country schools, the cause of education is materially aided, for much of the very cream of education comes from these districts.

There are many advantages derived from centralization of country schools, ten of which I will mention.

First, more commodious buildings.
Second, better attendance.
Third, freedom from exposure while on the road.
Fourth, social advantages.
Fifth, classification of pupils.
Sixth, advantages of large classes.
Seventh, having access to good libraries.
Eighth, pupils home at night.
Ninth, better playgrounds.
Tenth, expenses about the same.

The last mentioned, that of expense, is the one point most people stop to argue; but why undertake to base an argument on financial gain? The educational results are a hundredfold superior to those of the old plan. We find, then, that centralization of the country schools is the best solution of the country school problem that we have yet reached.

The natural conditions for educating a child are found in the country, where he is constantly surrounded by the great panorama of nature, which, while serving him who observes, aids in the interpretation of literature, science and art. With probably no less expense, good libraries, greater opportunities for expression, trained teachers who know well how to make the most profitable use of natural conditions, may we not hope to see systems of centralized schools making strong and valued members of society, ready and willing to perform well every duty in church, state and home?

SCHOOL GARDENING.

BY PROFESSOR R. P. CLARK, ASHTABULA, O.

[Read at the Farmers' Institute Held at Orwell, Ashtabula County, February 8 and 9, 1904.]

No question can be of more vital interest to every true lover of our republic than that of the correct education of the youth of the land, for upon this rests the welfare of our nation, nay, even more than this, the national life itself depends upon it. As a people we have recognized this fact and millions of dollars are willingly paid out every year by the tax payers or the republic for educational purposes. Systems of education have come, served their day and age well and passed away to give place to better systems. This is true not only as to buildings and equipments, but to requirements on the part of teacher and pupil as well. In the educational development of this nation the little red school house had its place and this was an improvement over the log school house, that needed no paint, where perhaps the Bible was the reader used for all classes in reading as Daboll's arithmetic was for all classes in arithmetic. Boys and girls then learned to read and cipher, and secure an education sufficient for their day and age, but we are a progressive people and more and more as the years went by the demand for educated men and women increased, and to meet this demand we built better school houses, put in patent seats, as they were called, increased the courses of study, required better preparation on the part of teachers, etablished free graded schools, and the praise of our public schools was upon every tongue. But are we satisfied that the educational problem of this country is yet solved? If so, why is it being so generally discussed? You know as well as I that no problem is solved until it is solved correctly and this educational problem is no exception. The graded schools with their excellent courses of study, splendid equipments, enthusiastic teachers, are a vast improvement over the schools of the log school house days. But the problem is still unsolved.

After an experience of more than thirty years, spent mostly in the schools of this county, passing through all departments of school work—from the district school, with boarding around thrown in, grade teacher, high school teacher, and superintendency—I declare to you, that I believe we, as teachers, boards of education, and people, have been making some mistakes we must hasten to correct. The trouble with the graded school system is that it classifies in masses too much and does not individualize as it should. We forget that the varieties of character and dispositions of the children are always equal to the number of children. You fathers and mothers found that out in your own homes. The lawyer, the doctor, the minister, the teacher, the merchant, the successful business man, are the ideals for which courses of study are usually prepared. Farmers pay their taxes, send their children to these schools and then wonder why the graduates of our high schools never stay on the farm. The wonder would be if they did, because their educational training is of a character intended to take them away from the farm. When we realize, as we will some of these good days, that there is as much necessity to educate for the farm as for the professions, we will have a greater number of good farmers, and fewer poor lawyers and preachers.

Now for the ideal school. I do not believe it will be necessary to break up the graded school system, only to reform it, correct some of its evils, give as much time to individual instruction as to class instruction, away with ideals for classes, ideals only for individuals. Let parents and teachers make a study of child nature and character, let them compare notes, they should feel that they must compare notes, for the destiny of a human soul is in their hands.

There are some things I would like to speak of in this connection. I can only mention one or two and leave them undiscussed. Parents' meetings are productive of much good; these meetings should not be mothers' meetings, but as the name suggests parents' meetings. Then teachers' meetings should discuss not so much how to manage as how to teach, and this brings us right back to the individual again, and so I insist that the individual must not be lost in the crowd.

As we have been trying to point out, courses of study as prepared lead toward professional or business education, and farming, the greatest industry in the country, without which all others must fail, is by our public school system practically ignored. I quote some points made in an excellent paper read by Professor Orville T. Bright at the New England Teachers' Association, held at Boston last summer. Mr. Bright said: "The life of the farm in no way enters into the instruction of the school. We teach the country boys and girls about banking, brokerage, stocks and bonds, and the foreign exchange peculiar to school houses. We teach obsolete compound numbers and compound proportion which never existed outside of a school house. Days and weeks of instruction are given to the greatest common divisor and to four-story complex fraction monstrosities; but never a word about the soil; the growth of the crops, which makes the farm life possible; or of trees, shrubs and flowers, which may make the farm home so beautiful." The country school has undoubtedly been a considerable factor in the mighty exodus from the farms to the villages and cities. It is time that a halt and an about-face be called in the great procession. The possibilities of comfort, freedom and health, of competence and happiness, of the dignity and beauty of labor as connected with farm life, should be exploited in the country schools. "Fill the curriculum with material having to do with country life and give the business processes of city and village a rest. They need it and so do the children."

The school garden is a thing almost unknown in the United States. Go through our country and take a peep at the school grounds and surroundings. Nine-tenths of them are ornamented with rail piles, stone piles, or rubbish of some kind and are as unkept and uncared for as a briar patch. Children can have no respect for such surroundings. The value of the influence of school gardening in the education of the child has been recognized in some of the countries of Europe for more than three hundred years. Two hundred and fifty years ago brave old Comenius said: "A garden should be connected with every school, where children can at times gaze upon trees, flowers, and herbs, and be taught to enjoy them." As if in response to this, his native country, two hundred years later, was the first to require by law the establishment of school gardens with elementary schools. The Austrian imperial school law of 1869 prescribes that, "when practicable, a garden and a place for agricultural experiments shall be established with every rural school." To-day Austro-Hungary can boast of nearly twenty thousand school gardens. In the province of Styria every school has a garden. Bohemia has four thousand five hundred and its enormous crops of fruit are by many ascribed to school instruction. In Sweden in 1869 a royal proclamation required school gardens, varying from seventy to one hundred and fifty-one square rods, to be appropriately laid out for the children of elementary schools. In 1876 Sweden had one thousand six hundred such gardens, and now the number is nearly five thousand. It is quite worthy of note that, while the Swedish system of manual training and gymnastics has been deemed so worthy of study and exploitation by American teachers, the school gardens, of vastly greater importance, seem entirely to have escaped their notice. In Belgium the school law of 1873 provides that every school shall have a garden of at least one-fourth of an acre, and a royal decree of 1897 requires that all teachers shall be able to give theoretical and practical instruction in botany, horticulture, and agriculture.

In Switzerland this has been a live question for twenty years past. Most of the cantons have encouraged the establishment of school gardens through prizes and financial aid, and ample provision has been made for suitable instruction in the normal schools. The effect on the home surroundings has been marked. Indeed, this is true wherever the gardens have been established for any length of time. France has rapidly developed the higher teaching of all forms of agriculture during the past twenty years, and now has at least one hundred institutions for this purpose, among the finest in the world. There are botanical gardens almost without number and lecture courses for the public schools have been established.

In 1882 the teaching of agriculture in the public schools was made obligatory. Today France has nearly thirty thousand elementary school gardens, and no new school can receive governmental aid without such equipment.

Even Russia, with all her inherent barbarism, is making great headway in school instruction in gardening. In a single province in southern Russia two hundred and fifty-seven out of five hundred and four schools have gardens aggregating three hundred acres. In 1895 these gardens contained, among other things, one hundred and eleven thousand fruit trees, two hundred and forty thousand forest trees, and more than one thousand beehives. Almost every form of economic gardening is carried on.

Germany has not as yet made the garden an organic part of its school system, but thousands of schools are trying the experiment. A charming description of one of these, by Dr. Herman Lukens, may be found in the *Educational Review* for March, 1899. "This garden contains four-fifths of an arcre, in the form of an irregular oblong, well laid out with gravel walks along the sides and center lengthwise and with three cross-walks. In the center is a fountain and at the intersections of the walks are circular plantings. At the north end one-tenth of an acre is planted with specimens of native trees, some exotics, and common ornamental shrubs. Every tree and shrub has its label with name and habitat. Next is the botanical division containing plants for special study in the school. The remainder of the garden is divided into six large plats, each surrounded by dwarf fruit trees or fruit bushes. Each of these six plats is divided into individual gardens one meter wide and two long, or about twenty square feet. One garden of each plat is alloted to the teacher. During the year 1898-99 six hundred pupils from the Burgerschule planted and cared for six hundred of these little gardens, cultivating either vegetables or flowers, as they chose."

Can we make school gardening a factor in our educational system? Most certainly we can and it will in time be done. In the country districts centralization is no longer an experiment. The wisdom of it is established beyond a question. For every centralized public school ample provision should be made for play ground and gardens. These school gardens will soon begin to call for the best varieties of seeds and plants and it will not be long till many of them will become veritable experiment stations for the cultivation of the best varieties of vegetables, food plants, flowers, ornamental grasses and shrubbery. Schools will begin to vie with each other and interest in agricultural products will be awakened that will change our now misnamed agricultural fairs from horse races and dog shows, to real agricultural fairs. Do you not believe that? I do, and I would like to see it done. I want to tell you what Mr. Stableton, superintendent of schools in Bloomington, Illinois, says about school gardening touching only the cultivation of flowering plants. Mr. Stableton determined that the unsightly school grounds of Bloomington should be beautified with flower gardens through the work of the school children and that the influence of the school planting should extend to the homes of the pupils to make them more beautiful along with the schools. The account of the first year's work reads like a fairy-story. Wiseacres said: "You cannot do it! The children will destroy your flower beds, and the boys will steal your plants." And the children and the boys did nothing of the kind. The total depravity of the children exists mainly in the imagination of their elders. Give the children a chance and we shall know more about them. "They were enthusiastic in making the ugliest spots in the yards the most attractive and they did it; volunteers cared for the plants during the summer vacation. Hundreds of home gardens were planted, and in September a flower show from school and home plants brought together hundreds of delighted parents and patrons, whose views of the mission of the public schools underwent a mighty change."

I have had some experience in cultivating flowers on school grounds, and have never had any trouble in keeping children from destroying them. They enjoy them. Oh! that the school grounds in Ohio might be cleaned up, that they might be made beautiful, with well kept lawns, flowers and shrubbery. The school yard should be an object lesson in attractiveness to all dwellers in the district, because more beautiful than any other yard in it. Its trees should be the handsomest its trailing vines the most tasteful, its shrubs the most thrifty, and its flowers the most beautiful. What would be the result? School work would take on new life. As has been said discipline would settle itself. The loveliness of child nature and a sweeter temper for school teachers would grow and blossom and mature with the plants. What has been done in any country of Europe can be done, can be excelled, in America. If you expect the boy and girl to stay on the farm you must demand that the public schools recognize farming as the greatest industry in this country, that it requires brains and culture on the farm as well as anywhere else to bring about the best results.

Add another half acre of land to your school ground. Write to the leading agricultural colleges of our country for plans and suggestions from men who are doing special work along this line. Go at the work in earnest and your garden will be a success and the influence of the training and education that it brings will tell in a growing interest in beautifying home gardens, lawns, and the cultivation of farm products. One year ago last fal I spent two days with a representative of the Minnesota State Agricultural College. We visited the centralized schools of Wayne, Gustavus, Johnston and Kinsman. He showed me plans for school gardens for these places and as I looked over these plans and listened to his suggestions I said, "These things are right and ought to be." I suppose some will say this is visionary, it is a theory, it will cost too much to carry out and all that. Some one has said that sometimes the best way to save money is to spend it and I am firm in the belief that a judicious expenditure of a little money in beautifying school grounds and planting school gardens will be like sowing good seed in rich soil that will yield an abundant harvest.

EDUCATION OUTSIDE THE SCHOOL OR COLLEGE.

BY MRS. EVA STRUBLE, WAUSEON.

[Read at the Farmers' Institute Held at Wauseon, Fulton County, February 10 and 11, 1904.]

Upon a subject so comprehensive as this, one cannot expect to cover the whole ground nor hope to do more than establish a few principles, and throw out some hints and suggestions which may be helpful.

Oliver Wendell Holmes thinks that the education of a child begins at least one hundred years before it is born; it certainly begins with the first dawning of intellect. As the infant opens its eyes upon this new, strange world, the mind is full of wonder, which wonder is expressed, as soon as ideas and questions can be formulated into words.

Education helps one to see, to think, to act; it discloses his limitations and his possibilities, and ought to lead him to consecrate his energies to the highest ends. Not every one is born to be a student, and "while there is no royal road to learning, there is also no compulsory road to it." Persons can no more be driven into the kingdom of knowledge than into the kingdom of heaven. Much of the education of all is acquired outside of books. We absorb it in the home and in contact with each other. A professor in a university, in answering the question, "How was I educated?" begins by raising the counter question, "Was I, in fact, ever educated at all?" Not that he had not teachers enough, but that their relations to him had been such that he doubted whether they had really educated him. While he honored and loved many of them, he attributed the most of his education to certain incidental, moulding influences, and to "contact with the other fellows." Text-books and school-room drill are only factors in education.

An educator of long experience recently said: "The American child gets his education from the school, his manners from the street, his religion from the Sunday school, his victuals from his home." Another western school superintendent claimed that material greed had so encroached on American social life that the family had given over its care and training of children to the public schools. It is true that Americans have so far magnified the power of their school system, that many parents delegate to it functions that it was not originally designed to exercise. The school has not so much encroached on the home, but the home expects too much of the school, and has willingly become a silent partner in the education of the child. While the new styles of American homes, with their artistic arrangements and conveniences, are in themselves educative, still the American parents have yet to learn the important share they must have in the education of the American children. No school machine, however admirable and smooth its working may be, can take the place of the individual interest of the parent in the child. In the growth of the child, nothing is more remarkable than his ceaseless activity; every waking moment is filled with action; his impulse to play constantly asserts itself. If toys, companions and cheerful surroundings are lacking, the play instinct may be modified but will not be suppressed. The purpose of nature in this insatiable love of play is obvious. It is to develop her children and prepare them for their life work. Play indicates the growth of powers and capacities which require excercise for their complete unfolding. The muscles become firmer, the bones tougher, the lungs larger, because of the love of play; every function is improved, and the whole body is built up and strengthened. No less valuable is the mental stimulus of play. The child is trained by it to quick perception, rapid judgment, prompt decision; his imagination cunningly suggests a thousand things to be done, and then trains the will and every power of the body and mind in the effort to do them. The sports of childhood are admirably adapted to quicken the senses and sharpen the wits. Nature has effective ways in her school of securing the exercise which is needed to develop every mental and every bodily power. She fills her children brimful of the capacity for enjoyment, and then gives them freedom, assured that they will be their own best teachers.

Children always like to play housekeeping and make mud pies, and, to tell all in a nutshell, this is practically what the kitchen garden is. It is housekeeping pure and simple. Instead of sending children to the former kindergarten, where all sorts of childish pastimes are taught, they are now put into a miniature kitchen. And it is not humiliating, tiresome work, but housekeeping set before them in most attractive form, so attractive, indeed, that the former kindergarten tots are delighted, and think it most wonderful and interesting work. The system is a combination of songs, exercises and plays, followed by an industrial training, all designed in a thoroughly practical way to teach a child simple housework. It is divided into six distinct parts, each taking a month to master. Try to imagine little folks learning all the following: kindling fires, waiting on the door, bed-making, sweeping and dusting, completely arranging a room according to artistic taste. Then the laundry process, from the preparation of the tubs and sorting of the linen, to the washing itself. Next comes the ironing, neither is scrubbing neglected. Laying a dinner table and the selection of a full course dinner comes also in due order. Then last of all, as a recreation, comes the real old-fashioned mud pie play. With moulding clay as a substitute for pastry, the children are taught to knead bread, turn out tiny rolls, biscuits, and make pies. After this come real bread and pastry. All the lessons are enlivened by exercises and songs, much as in the ordinary kindergarten. Boys are interested as much as the girls, and there is no reason why they should starve in later years in bachelor apartments if bereft of a cook, or be at a loss to kindle fires in the family kitchen. Where is there a family man of the masses, who, at some stage of his life, has not had a tussle with a smoking fire or a tumbling stove-pipe? Kitchen gardening when a boy, would have taught him about these things. In *Harper's Magazine* for September, 1903, is a very interesting account of a Paris school colony. The children are taken to the country, and taught many useful things.

A recent visitor to England says, "While visiting a large number of primary schools, the opinion that I have long held grew more strongly within me, that our primary education might be made more interesting to teacher and pupils by adopting some of the foreign methods. Suppose that a child lives in a seaport, and now and then, as a treat for good conduct, a class is taken to the docks. The ships are seen, the men from various countries, the goods they bring, are spoken of, and then back in the schoolroom the map is brought down, and at once the child is interested; and if pictures of the life of these foreigners in their own homes be shown, the foreign country becomes very real to the children, and the dry facts of inhabitants, mountains, rivers and towns will stick in his memory as living facts, not mere words for repetition."

No more charming idea could be imagined than a garden attached to every public school in the country, nor can the value of instruction to both boys and girls in the practice of gardening easily be overestimated. The United States, however, can boast of only one or two experimental gardens of this nature, and these for city children only. Nor can England or Germany make any better showing. On the other hand, in France, Saxony, Belgium, Switzerland, Russia and Sweden, and in one province of Austria, well conducted school gardens are common. In many Russian provinces the children are encouraged to plant trees of all kinds in the neighborhood of the school building, such as forest, fruit-bearing, and decorative trees and shrubs. Silk worms and bees are also cultivated systematically by the pupils. Along with the garden work proper provision is made for the instruction of girls in those branches of domestic and rural industry with which women have generally to occupy themselves—dairy work, cooking, sewing, nursing and so on.

In looking over a very wide field for examples of model school gardens, the one at Dayton, Ohio, may, perhaps, be selected as illustrating the object aimed at. The Dayton management employs an experienced gardener who, as occasion may require, instructs the boys in methods of planting, etc. The pupils are supplied, free of charge, with all necessary seeds, bulbs, tubers, slips, sets, etc., and even the tools are furnished. All classes from the very youngest are eligible, and have certain hours set apart for garden work. All time spent in the garden is counted as regular school time. European examples have demonstrated that such a garden is speedily followed by others; at first, it may be, in only a few scattered instances, but, ere long, as shown in France, in sufficient numbers to thus equip every rural and village school.

Last summer a children's school farm was opened in one of the most crowded districts of New York. The question of how to control an unruly mob of children of various ages promised difficulties, but as soon as the children ceased to be onlookers and became workers, there was no trouble. The park department gardeners who prepared the ground were Swedes and as in their own country they had enjoyed school gardens they entered into the spirit of the farm and let the children help. The farm grew to perfection from the suggestions of these men, the parents and police, one of the latter saying, "These children will never obey until the tent is made more beautiful than anything they have ever see." Following this suggestion, a floor was laid, and a box of blooming plants was placed around the whole tent, (twenty-five feet by thirty-five feet). The effect was magical. Once a week, in the tent, a round tub was filled with water on the surface of which floated a mass of water lilies in all their fair, cool, beauty. Their subtle influence seemed to reach all. Making beautiful parks, as making a beautiful garden, with the "Do not touch" sign is like eating luscious fruit before hungry children—they want some too. So at stated times a basketful of cut flowers was distributed in the tent, in this way satisfying the wholesome longing aroused by the boxes of plants which were to be respected. The few weeks' work on the ground, planting seeds, caring for the growing plants, the responsibility and pride of individual plats, the having an object of personal interest to them, which gave to each something to do, has done much for these children. They have learned something of the fact that work can also be a pleasure, and they can now be guided into doing things useful where once they could hardly be controlled. It was a long time before proper implements were furnished, but clam shells just fitted little hands and made excellent substitutes for hoes.

City farming on poor soil, where the ground looks very much like concrete, is quite a different matter from the same work done in the country. Two years ago the city of Columbus, Georgia, opened its primary industrial school for the factory children, the only one of its kind in the South, and the first in the United States to be organized as a part of a public school system independent of the uses of a training school for teachers. A most interesting result of the children's share in the furnishing and arrangement of the different parts of the house has been their perception of the fact—grasped very slowly—that in a properly appointed dwelling certain rooms are to be used for certain purposes, and not in any haphazard fashion that indolence or indifference might suggest. To every newcomer it is inexplicable that one should have a special room in which to receive their visitors, another to sleep in, and a kitchen that is not a place to eat in as well.

Following this perception has come, almost with no formal instruction, the idea that a difference in apartments suggests a difference in one's personal appearance when engaged in each. When people gather in the pretty room that has in it the books and piano and the beautiful marble lady, they must themselves look as well as they can. When one helps to cook, one must have clean hands and nails, and protect one's dress with a large apron. Since a bed is something to be so carefully supplied with two sheets and a white spread, since its pillows must be so spotless and so exactly placed, then one should not sleep in the soiled garments worn through the day, but in a night dress made and kept clean for the purpose.

Pottery and basket making are extensively carried on here. Clay for the former is obtained by the children, during their field lessons, from a neighboring hillside and the articles made from it baked in the kitchen kiln. The rows of knobby little jars used by the pupils for washing their brushes during the painting lessons, may not be very artistic, but they have served in addition to other good ends the very excellent one of sending these boys and girls back to the habits of their ancestors in making use of materials close at hand instead of thinking everything needed must be purchased ready-made at a store. The work of basketry has resulted in some really beautiful productions, and has been directly serviceable in strengthening weak muscles and in helping to correct the stooping postures almost universal. They also have gardens yielding a fine supply of vegetables which the children are allowed to take home with them—a much needed incentive to their parents to cultivate the garden plats around their homes. Window gardening is also taught.

Wayward and homeless boys are taken care of in San Francisco by a society called the Youth's Directory. The society has recently established a farming school with the object of teaching boys to become trained farm workers. Because of the great scarcity of such workers, boys thus trained will have no difficulty in finding work. The course, to graduation, will require three years. At the end of that time a boy ought to be able to render efficient service in the vineyards, orchards and farms of the state.

A year or more ago, there was opened, in New York, a technical school for girls. Five hundred girls applied the first week. Equipment for sewing, dressmaking and cooking was secured. The sewing course will require two years. The girls furnish their own materials; they are not allowed to use lace or embroidery, but must devise trimming of the material. This is done to discourage the tendency to use tawdry decoration, and that fine hand work, for which there is an increasing demand, may be taught. For purposes of comparison the pupils are asked to bring any specimens of old embroidery or bits of dress which have descended to them. Some of these contributions are especially interesting and a set of "examination pieces" from a Prussian school are veritable works of art. The girls bring fashion sheets and have a criticism class, the object being to develop good taste.

Who of us cannot think of many, many ways of education outside of what is commonly termed 'book learning?"

HAND WORK AND HEAD WORK.

BY MRS. PHILENA SANTEE, DAMASCUS, OHIO.

[Read at the Farmers' Institute Held at Damascus, Columbiana County, February 17 and 18, 1904.]

In this age of books and public discussions, it is difficult to say anything new. Originality is well nigh impossible, and I can truthfully say that it will not be attempted in this paper. So much has been so well said, even during this institute, that at this last session I cannot even hope to make up in earnestness what I lack in originality.

The old saying that anybody can be a farmer has lost much of its effect on the minds of the thoughtful public. To be a successful farmer does require physical strength, but it also requires brain, and the power to use it as well. In no other occupation do we find the same possibility of equally developing the brain and muscle which we know is the most productive of good health. We admit that farmers do not always exercise brain and muscle proportionately, but that does not change the fact of the possibility of it.

People, even farmers, will give their health to gain wealth, and then will give wealth to gain health, but they do not always succeed.

In much of the business of the world, if you know the addition and multiplication tables, and can read and write, you can get along. How much mental capacity is required to measure off a few yards of calico or cloth, or weigh a few pounds of sugar or coffee, or cut and make a suit of clothes, or even learn telegraphy or type-writing? All these things once learned are simply to be repeated over and over again every day in the year. But how with the farmer? He must know the addition and multiplication tables, also. He must buy and sell and weigh as well as the merchant. He must calculate his interest; he must look after the health of his animals. Yes, all these, and much more. His farm is a great botanical garden, where the habits, wants and needs of plants, tree and grain may be studied, and be a delightsome part of his vocation. His farm is also a greater laboratory, greater and finer and more wonderful in its construction than any ever prepared by man.

A reasonable amount of labor is of great advantage to us. Some, however, live a life of slavery in their eager grasp for dollars. They starve the mind and heart to line the pocketbook.

Our fathers came to these lands when they were teeming with fertility, but we are learning the fact that our lands are already becoming exhausted and incapable of producing the bountiful crops that they formerly did. New conditions have arisen in the agricultural affairs of our country, and these conditions must be met with intelligence or we are sure to fail. Why not study nature and see what she can do for us? I think a genuine love for the business of farming is a necessity to complete success. Too many accept it as a last resort. Could not this love for the vocation be instilled more deeply into the minds of the young by adopting a course of "nature teaching," as proposed by some of the leading educators of the day? The children of our common schools need training of the powers of observation. We all see so little of the world about us. Teachers are needed who can open our eyes and fix our minds on the beauties and realities among which our daily lives are passed. This accurate observation of natural objects and facts is the only foundation on which scientific attainments can rest. The scientist is chiefly a man who sees better than his fellowmen, but science is a great help in practical life. Many farmers acquire much of this power by their own unaided efforts, and these are the very ones who most regret that they did not have in early life the help of trained teachers. The farmer's child lives where he has the best opportunity for such training. It certainly would benefit him in a practical way and add an interest to his life which might do much to wean him from a desire to leave the farm.

I really have the deepest sympathy for one who sees nothing but dirt in the earth he treads; nothing in the summer's sun but heat; nothing in the winter's cold but discomfort. It lies largely with ourselves whether we see the bright and blessed side of life, or the dull and commonplace.

Too many think that planting and reaping the crop is all there is to farming. They let some one else do their thinking for them and consequently reap much of the profits they could lay up for themselves. The secret of rapid growth is not planting in the moon or star sign, but planting in a very fertile soil that is in perfect mechanical condition, and when the season is far enough advanced to be just right. Much of the farmer's profit also depends upon the skill and good judgment used in marketing the crops. A good rule is to do the right thing at the right time.

Domestic affairs must have their due place in this topic, for brains are rerequired in housework as well as in farm work. We hear the remark that there is so much drudgery about housework. There seem to be two things embodied, the time of doing and how it is done, that convert or redeem it from the stamp of drudgery. Study system, and practice it. Think, plan and execute in reference to economy of time and strength, and you will find spare moments to read; you will have something to think and talk about and you will forget that housework is drudgery. Keep the life balanced by a strong, worthy, working purpose. It has been said by some one that, like poets, "housekeepers are born." Some women assume the directorship of the household so quietly and rule it so easily that we quite forget the labor in the results, or perhaps imagine there is no labor at all, or we look admiringly when we get a glimpse of such a household or of such a presiding genius, and wonder why we cannot do as well. But remember that a perfect housekeeper demands nearly all the known virtues and qualitites.

Humanity is about the same the world over. The most skillful workman, as well as the bungler, stands ready to doff his hat to the one who is really master of his art. It takes time, skill and experience to make good bread. Headwork is needed from the time it is begun, until the brown, fragrant loaves stand on the shelves.

Industry and system are two great means to accomplish much, both as to health and wealth.

Good cooking takes brains and close attention. Give thought, care and pains to your housekeeping, so that it will be clean and healthful, and create an atmosphere in which it shall be good to live. But cooking is not all there is of life, even in the kitchen, and if you find yourself, even against your will, obliged to give most of your time to it, put into it your intelligence, your judgment and your refinement and the result will be beneficial to all.

There is a difference between a housekeeper and a homekeeper. Homekeeping means keeping and caring for the inmates of the home with the same carefulness which the good housekeeper bestows upon the house and all that belongs to it. Good housekeeping is a help to good homekeeping, but it is not absolutely necessary to it. Housekeeping may be a very delightful business if one has plenty of help and means, but homekeeping is a heaven-given privilege, a glorious opportunity, within the reach of many mothers.

In conclusion I would have you remember it is not the amount of knowledge packed away in the brain, but the ability to use all knowledge as it comes along to the best advantage that makes one strong and useful. Let s then, as workers, both farmers and housewives, remember it is not the "work that honors the man, but the man that honors the work." Let us be proud of our vocation and soon ours will be the equal of other professions. Let us set ourselves in harmony with our calling and raise higher its standard and dignify our labor by loving it. Let us envy not the dwellers of the town and city, but beautify our homes and farms, take a step upward with each new day, and praise God for the blessings that are ours.

GOOD ROADS.

BY D. R. FAIR, RUGGLES, OHIO.

[Read at the Farmers' Institute Held at Nova, Ashland County, December 11 and 12, 1903.]

Let us consider the subject of good roads under four heads: (a) kinds of roads; (b) the cost of good roads; (c) some laws in regard to the construction of roads; (d) need of good roads. There may be mentioned eight kinds of roads: the clay road, macadam, telford, paved street, flag-stone pavement, gravel, steel track and mineral oil road. When at its best, in some ways, there is no better road than the clay road. It is solid enough to haul a good load and is easy for horses to travel on, but when it is bad there is no worse.

The macadam road is made by putting a course of stone on the prepared roadbed four inches thick after it is thoroughly rolled, the stones to be of of a size to pass through a two and one-half inch ring. The interstices are filled with coarse sand, wetted and thoroughly rolled. Upon this is put another course of stone, the stones being an inch in diameter and treated as the first course. Ground stone screenings are then spread upon the surface, wetted and thoroughly rolled until a smooth, hard surface is obtained. The completed roadway should be not less than eight inches in thickness. The telford road is like the macadam, except that the foundation consists of larger stone of various sizes. The paved street has a foundation similar to the macadam and then finished with brick. The flag-stone pavement is made by placing stone eight or ten inches thick, three or four feet wide, and as long as the width of the roadway. The steel track road has a macadam foundation, upon which are put steel grooves for the wheels to run in.

Within the last few years roads have been improved by the use of mineral oil. It was begun in California in 1898. At first, the only purpose was to lay the dust. It not only lays the dust, but is found to be splendid in making roads for all seasons, binding together the material, whether clay, sand, gravel or fine material, on top of a macadamized road. There are seven hundred and fifty miles of oiled roads in California; it is no longer an experiment there. There are three kinds of oils: those with napthene, paraffine or asphalt base. The kind with an asphalt base is the oil to use. The amount of oil required for a sixteen foot roadway varies from two hundred and fifty to four hundred barrels of forty-two gallons each, which at one dollar a barrel would cost two hundred and fifty dollars to four hundred dollars per mile for the oil. The cost of applying the oil to the road is comparatively small. I want to give an abstract of what these roads will stand. Mr. White, a civil engineer, said: "There was a rainfall of ten and a half inches, six inches in a single night. The whole country was flooded. The water rushed down an oiled road, having a grade of six per cent., but did not make a mark on it. At another place an unoiled road with the same grade was so badly washed that it could not be used until repaired. A current down a canon, striking a road at right angles, left uninjured an oiled road, but cut to pieces a road surfaced with decomposed granite." This story can hardly be believed, but it might be well to give this method a thorough trial. It might do just as well on the less traveled roads, and the expense would be much less.

The cost will be the great objection to road improvement. But there are other things that cost a great deal. To build churches has been an expense to the people, and to support them is a continued expense. Our common schools are an annual expense; but churches and schools are a blessing to the people. Tobacco is an expense without any good. Intemperance is a great expense to the people and brings only ruin and waste. It is said that if a frog be put into hot water it will jump, but if put into cold water and the water is gradually heated, the frog can be boiled through without moving a muscle. We have become so used to the evils of intemperance that we are motionless, though thr atened with ruin.

The ideal road is the paved street, but owing to the cost the macadamized or graveled road will likely be the kind built. The costs of these roads vary from nine hundred dollars to twenty-five thousand dollars per mile. Maurice O. Eldridge, assistant director, office of road inquiry, states that "in places in New York state first-class single track stone roads have been built for nine hundred dollars to one thousand dollars per mile. In New Jersey many excellent gravel roads have been built for one thousand to one thousand three hundred dollars per mile. Macadam roads have been built in New Jersey for two thousand dollars to five thousand dollars per mile, varying in width from nine to twenty feet. In Connecticut macadam roads eighteen to twenty feet wide cost three thousand dollars to five thousand dollars per mile. In Rhode Island macadam roads sixteen to twenty feet wide cost four thousand dollars to five thousand dollars per mile. In Massachusetts macadam roads costs six thousand dollars to twenty-five thousand dollars per mile." Telford roads generally cost more. From several sources the cost of macadam roads in Ohio ranges from two thousand dollars to five thousand dollars per mile, and gravel roads from one thousand two hundred dollars to three thousand dollars per mile. The difference in cost is due largely to the nearness and kind of material used and to grading.

To have a good road all hills must be cut down to a four per cent. grade, that is, a rise of four feet to the hundred feet in length. This limit is fixed because it is the highest grade a horse can trot up with ease and trot down at full speed with safety. A team will pull only half as much up this grade as on the level, and in a rise of ten feet to the one hundred feet a team can pull up only one-fourth as much as on the level.

Can we afford to build macadam or gravel roads.?

It is true the farmer is not the most favored class financially, and many will feel that an additional tax will be like taking the last vestige of profit from them. But let us not think ourselves the least favored class. The state law allows an additional tax to be levied in each township for improving the roads, not to exceed three mills on the dollar. Such a tax would raise in Sullivan township one thousand five hundred and seventy-six dollars; in Troy township one thousand two hundred and twenty-four dollars; in Ruggles township one thousand six hundred and fifteen dollars; in Clearcreek township one thousand seven hundred and sixty dollars; in Orange township two thousand eight hundred and twenty-five dollars. If macadamized roads can be built two thousand dollars to three thousand dollars per mile or gravel roads for one thousand two hundred dollars to three thousand dollars per mile, each township could build half a mile or more of road each year and pay for it without a great burden to the people. In my road district the additional tax would range from sixty-nine cents to eighteen dollars and nine cents. The civil engineer for Ashland county thinks that crushed stone could be shipped from Marion, Ohio, for one dollar per cubic yard. Estimating nine hundred to one thousand five hundred cubic feet per mile, the crushed stone could be shipped in for nine hundred dollars to one thousand five hundred dollars per mile. There would then be the additional expense of putting it on the road. Where material is at hand it might be cheaper for each township to buy a stone crusher, which could be bought for from four hundred dollars to two thousand dollars. If each township had ten or twelve miles of its main roads improved, it would benefit nearly everyone in the township. In some townships a mile each way from the center would cover the worst roads.

The question of good roads is being more and more agitated. There are not only county and state organizations, but there is a national organization with W. H. Moore, Chicago, Ill., as president. This organization makes laboratory tests of road material free of charge and builds sample roads. Such a road has been built in Geauga county, Ohio, one mile in length for two thousand eight hundred dollars. There has also been a move made to build a national road from New York City to Chicago, Illinois. If each township would expend as much for roads as it does for schools, there would be a wonderful change in ten or fifteen years, and there is an end to the expense some time; but there is no end of expense of schools. The people might build many of these roads themselves in the less busy season.

Some idea may be had in regard to keeping up these roads by quoting from the auditor of Union county, Ohio. "The expense of keeping up macadamized roads can hardly be computed, as some of our pikes which have been built for six or eight years have not had a dollar's expense on them except filling in holes about four years after construction which would not average over two dollars per mile. Roads properly constructed ought not to need recoating for ten years." The clay roads cost many times more than this per mile for repairs.

It may not be out of place to say a few words about the road laws of some other states in connection with the law of Ohio. In Massachusetts certain roads are selected by a highway commission as state roads and are improved at the state's expense. Connecticut, Rhode Island, New York, and Pennsylvania give state aid. In New Jersey the adjoining property owners pay one-tenth, the state one-third and the county the remainder. Millions of dollars have been given to cities by the government for labor and other improvements. It would not be more than right for the farming communities to get a share. A growing city with good markets is a help to the farmer, a prosperous farming community is a help to the city. The taxable value of Ohio property in 1898 was one billion, seven hundred and sixty million, two hundred and fifty-seven thousand, four hundred and forty-three dollars. A tax of one mill on this would be one million, seven hundred and sixty thousand, two hundred and fifty-seven dollars. This would build eight hundred and eighty miles of road costing two thousand dollars per mile. There are about eighty thousand miles of roads in this state. The theory for state aid is that the cities would get some benefit from good roads in the country, that is, Cleveland would get some benefit from good roads in Ashland county, and therefore, ought to help pay for them. But there are some counties in Ohio that have improved many of their roads and ought not to help others. In Ohio the law places the power in the township. A petition signed by one hundred or more taxpayers compels the trustees to hold an election, and if a majority vote in favor, they appoint three road commissioners who have various duties. The trustees may issue bonds and levy an additional tax not to exceed three mills on the dollar.

Instead of asking, Can we afford to build good roads? we might ask, Can we afford to do without them? It is estimated that the annual saving to the people of the United States, by good roads, would be five hundred million dollars. In the United States the average cost of hauling a ton per mile is twenty-five cents; in Europe it is eight and three-fifth cents. The cost of all hauling in the United States is estimated to be annually nine hundred million dollars. Farmers could often haul their products through the winter and be better prepared for their spring work. We need better roads for our pleasure and convenience as well as for profit. It is claimed that localities where good roads have been built are becoming richer, more prosperous and more thickly settled. Townships that have centralization of schools need them. Free rural delivery is no longer an experiment. There were in Ohio, April 1, 1903, one thousand and ninety routes in operation and petitions for eight hundred and forty-nine more Uncle Sam has reached out his hand so far, and we ought to extend ours in a friendly grasp. It might mean the bringing of mail to everybody's door. We want our trading places as near in the winter as in summer. In Holland they measure distance by the pipes of tobacco they smoke while going; a place is so many pipes away. Reckoning in the same way our market town sometimes is one pipe away, sometimes two, and sometimes it is a whole package of tobacco away. I wish to read from the *Ohio Farmer* of December 5, 1903, in regard to this question: "Some system should be put into operation in Ohio as well as in all other states that will improve the roads, especially the rural routes. The present system makes no progress. Under it the roads are no better than they were twenty-five or fifty years ago. Had the labor and money been expended in systematic improvement during the past, we would have good roads, along all the more important lines at least. There is general expectation that something will be done by Ohio this winter. The spirit of improvement is in the air, and the rural carriers will find their demands for better roads along their routes backed up by strong popular sentiment generally."

In 1899 the produce of American agriculture was nearly five billion dollars. The drink traffic costs the people of the United States about nine hundred million dollars annually. This would buy one hundred thousand homes annually, costing five thousand dollars each, and build annually one hundred thousand miles of good roads costing four thousand dollars per mile. Ten years of righteous living would make a paradise of this country.

TALK AND TALKERS.

BY MRS. ANNA B. ROOT, BRUNSWICK, OHIO.

[Read at the Farmers' Institute Held at Chatham, Medina County, January 29 and 30, 1904.]

This subject is a large one and covers an immense territory. When we take into consideration the vast area of the whole world and think of the countless millions who are talking at the present time and then remember that "all who tread the globe are but a handful to the tribes which slumber in its bosom," then indeed we will see the great extent of the subject. The divine gift of speech has been given to nearly all of the human family, and many who have "laid them down in their last sleep" have left behind them words of mouth or pen which we shall consider under the head of "talk."

As there are many kinds of talk and many kinds of talkers we will notice a few of the most common ones. There is the tedious talker, with his recital of uninteresting personal affairs which seem never ending. It may be the everyday, outdoor work or the monotonous routine of the housework, but it is talk, talk, talk, the same thing over and over again, until every nerve is ready to jump and twitch. Such talk is all perfectly right and proper, if given in small doses at long intervals, but as a steady diet it becomes very monotonous and indigestible, and when obliged to listen to it every day and for hours at a stretch, with its never-ending questions, which must be answered with some show of interest, it is most wonderfully tedious.

Then comes the chronic grumbler, who is always finding fault. There is nothing that suits him. He is determined that something must be wrong anyway, like the old man who was overheard talking to himself. He had been drinking and felt decidedly cross and said: "I'll ask Mary Ann if she watered the old gray horse. If she says 'Yes' I'll say, 'What made you without my telling you to?' and then I'll whip her. If she says 'No' I'll say, 'Well, why didn't you?' and then I'll whip her."

Next comes the one who is always boasting he is so important. He is always talking of what he has done, what he is doing and what he can do. Unless his opinion has been consulted the work is never rightly done. The affairs of the government would run along so much smoother if only he could have the management of them. In fact, to hear him talk one is reminded of Pope's "Essay on Man:"

"Go, wondrous creature, mount where science guides,
Go measure earth, weigh air and state the tides;
Go teach the planets in what orbs to run,
Correct old time and regulate the sun;
Go teach eternal wisdom how to rule,
Then drop into thyself and be a fool."

Another class of talkers are those who are thoughtless and quick-tempered. They are angry without cause and say bitter, cruel things. Sometimes the words are spoken without thinking, but still they hurt. Sometimes they are spoken with ill will and hardness and often the best of friends are estranged for life. 'Twere better to remember the words of Will Carlton:

"Careful with fire is good advice, we know;
Careful with words is ten times doubly so.
Boys flying kites haul in their white-winged birds;
You can't do that way when you're flying words;
Thoughts unexpressed may sometimes fall back dead,
But God himself can't kill them when they're said."

Now we will notice the talker who is profane. He seems to think profanity makes his conversation more important and stronger. Perhaps it does. A little of it goes a long ways sometimes, but if he could know how it sounded to ears unaccustomed to hearing it he would see how ungentlemanly it made him appear, and if he could hear it when alone at midnight, with only the One whose name he is so thoughtlessly using, it would not sound so wise.

"Are you paid anything for swearing?" Eli Perkins once asked a commercial traveler. "No, I do it for nothing." "Well," said the lecturer, "you work cheap. You lay aside your character as a gentleman, inflict pain on your friends, break a commandment and lose your own soul—and for nothing! You do certainly work cheap, very cheap."

It is said that a group of students were once talking together in the presence of the chief justice of the United States. They were using oaths whenever they could sandwich them into their conversation. Listening quietly for a short time, he said, "Gentlemen, let me relate an anecdote, please." He then proceeded to give them an old, familiar fable, saying between each sentence, "Tongs, sugar-bowl and tinder-box, tongs, sugar-bowl and tinder-box." When he finished the story one of them said, "The anecdote was good, but what about the tongs, sugar-bowl and tinder-box?" "Oh," he explained, "that was only my way of swearing." He was not troubled with their profanity again.

The worst of all talkers is the vulgar or obscene one, to whom there is no honor in manhood or virtue in womanhood. These talkers love to congregate in the blacksmith shop or lounge in the store, and unfortunate indeed is the matron or maid who enters the charmed circle unexpectedly. The ominous hush which falls upon them will bring a blush to the cheek of modesty. It is said that talk is cheap, and surely it must be so, for if such talk sold for a cent a bushel not one of them would take a bit of it home to his mother or sisters. How many there are, both masculine and feminine, who forget the words, "Blessed are the pure in heart, for they shall see God."

But why look at a dark and ugly picture when we might look at one bright and beautiful? Why listen to an uninteresting talker when we might hear a pleasing one? And what is more interesting than the talk of childhood? Someone has beautifully said, "A child is a wellspring of joy in the house." One who has never tried the companionship of a little child and listened to its innocent, lisping prattle has missed one of the greatest pleasures of life. The gleeful laugh and happy chatter of little children makes the sweetest music, and we wonder not at the blessed words from the Saviour's lips, "Of such is the kingdom of heaven."

In pleasing contrast to the grumbler is the cheery, happy-hearted man. He persistently sees and talks about the bright side of life. If the course of events does not run smooth, and the clouds are dark above him, and the rain should fall just when he wanted fair weather, he would quote James Whitcomb Riley:

"'Tain't no use to grumble nor complain,
It's just as cheap and easy to rejoice;
When God sorts out the weather and sends rain,
Why, rain's my choice."

What a blessing to possess a cheerful, sunny disposition, for people may always look on the bright side of life without being dazzled. A good word makes the heart light. Kind words have a magical power in allaying irritation. "A soft answer turneth away wrath, but grievous words stir up anger." Kind words lighten burdens and sweeten toil. They are the oil to the machinery of life.

In pleasing contrast to the fiery-tempered and unsympathetic is the one who is always thinking of helping others by a kindly word or deed. There is no trait of human nature which is more precious than a quick and ready sympathy with the joys and sorrows of others. Sometimes we ask ourselves if it can be that such trifles as kindly and sympathetic words can affect another life, but from all around us comes incontrovertible evidence that our words, good or bad, not only affect our friends and neighbors, but, through them, others and yet others in a never-ending, ever-widening circle. How necessary, then, that they should be "fitly spoken."

HOW CAN WE BEST PROTECT OUR FEATHERED FRIENDS?

BY J. H. HYDE, LOUDONVILLE, OHIO.

[Read at the Farmers' Institute Held at Loudonville, Ashland County, January 8 and 9, 1904.]

The proposition of protection to our birds has been before the people of this country for many years. For more than a generation our birds, especially our songsters, have had absolute statutory protection, while our game birds have been likewise protected, except for a short open season annually. Every Legislature in Ohio for the last thirty years has amended or supplemented our game laws—sometimes for the better, more often for the worse—and the problem still remains unsolved. Notwithstanding all that has been done, the decrease in the number of our songsters has been so alarming that if not checked in the near future many of our choicest varieties will soon become extinct. During the last fifteen years the average decrease in thirty-five states of our Federal Union has been forty-six per cent; in Ohio, thirty-eight per cent; Georgia, seventy per cent., and Florida, seventy-six per cent. At this rate of decrease all can easily see what the result will be in a few more years.

Our songsters, with the exception of the grosbeak, chicadee and a few others, are migrating. They are with us only during the pleasantest portion of the year, arriving in this latitude about the middle of April or first of May, and remaining until autumn. As soon as the chilly nights of October begin to assert themselves they migrate to a more congenial climate. When the decrease in the number of our birds became so apparent that all the people talked about it, and writers were writing about it, and the agricultural papers were printing long articles on the subject, I conceived the idea that perhaps our songsters, like many of our wild animals, were gradually changing their habits, and after migrating from us in the fall many refused to come back the following spring. Inquiry of people who had been through the southern states and articles from the southern press developed, however, that there was the same alarming decrease there as here. The conditions were exactly similar.

I then began to study their habits to discover their natural enemies. By careful and continued observation I found that the crows were by far the worst enemy of our birds. During the months of May, June and July they live almost entirely upon the contents of birds' nests, destroying alike their eggs and their young. The orchard is a favorite nesting place for many of our choicest birds. You can find more robins' nests in your orchards than on all the rest of the farm. Every farmer, too, has noticed that the orchard is daily visited by crows, flying from tree to tree and from branch to branch, inspecting every place where a bird might build its nest, and a nest must be hidden away very well indeed if it escapes the sharp eyes of this black marauder. If during these months you go into the woods and seat yourself at the root of a tree and remain perfectly motionless, keeping your senses on the alert, especially your sight, you will not usually have to wait long until you will see crows flying noiselessly among the trees. Sometimes you will see but one, but more often three or four, as they usually hunt in squads. Now, if you remain perfectly quiet and motionless, if there is a bird's nest anywhere near you can see how they do their work. Last summer a pair of robins built their nest on an apple tree about twenty-five feet from my house, so close that the crows were afraid to venture in. They raised their brood in safety. Another pair built their nest in the crotch of a young apple tree about three hundred feet from the house and the crows robbed the nest before the mother had been sitting a week.

The bluejay, although protected by law, is another enemy of our song birds. Jays destroy every nest they find, but, unlike the crow, they hunt singly. Happily they are not very numerous, and will never become so, because the crow includes them in his mission of destruction.

The cat is another deadly enemy of our bird, preying mostly on those that build their nests near our homes. They kill many old birds, but their greatest depredations consist in killing their young before they are strong enough to fly beyond their reach.

The red squirrel is another murderer. He will destroy every bird's nest within half a mile of his home. He delights to destroy the eggs, hurl the young birds from their nests and tear the nest to pieces, all from pure malice. Then we have several varieties of bird hawks, snakes and a few other minor enemies of birds, all of which destroy many during each season.

The English sparrow is held by many to be responsible for the loss of our bird. My observations will not justify me in attributing to him the extremely pugnacious character given him by many writers. I have never seen him fight other birds, except in defence of his own. I believe, however, that he has driven our purple martins away. The sparrows remain with us all winter and take possession of the martins' houses in the spring before they arrive and when they come and attempt to dispossess them of course there will be a fight, in which the martins are vanquished every time. If people would put up new bird houses just at this time the martins would occupy them and all trouble would be at an end.

Knowing as we do now the causes of the destruction of our birds, what can we do to counteract our loss? The only advice I can give to destroy their natural enemies is to wage a war of extermination on the crows. No farmer should permit the raising of a single brood of crows upon his farm. Their nests are easily betrayed by the cawing of their young, and by the judicious use of a shotgun are easily destroyed. The old can easily be killed by the use of poisoned corn placed upon the cornfields after planting. Another good method to kill them is to poison a carcass and place beyond reach of animals. If you should kill a few cats this way, all the better. Kill the jays, bird hawks, red squirrels and snakes. Then either kill your hungry cats or feed them so well that they will let your birds alone.

Thoreau said: "Destroy your forests and you destroy your birds." I can readily see the truth in this. By reducing the acreage of forest you reduce the area over which your birds were permitted to roam in search of food and brooding places, and contract the sphere of their enemies so that their nests can more easily be found by them.

Hodge, Long and the Audubon Ornithological Societies advise cultivating a closer friendship with birds, taming them so that they will build their nests near our houses, where the danger of molestation is not so great. This sounds well in theory, but I consider it impractical. Destroy their enemies or the enemies will ultimately destroy all your birds.

"The summer came and all the birds were dead;
The days were like hot coals; the very ground
Was burned to ashes; in the orchards fed
Myriads of caterpillars, and around
The cultivated fields and garden beds
Hosts of devouring insects crawled and found
No foe to check their march, till they had made
The land a desert without leaf or shade."

When we talk of protection to our game birds we are brought face to face with an entirely different proposition. If farmers only would, they could protect them with very litle inconvenience to themselves and at trifling cost, so that in a few years we would have myriads of these beautiful and useful little birds around us. Our game birds, unlike our songsters, build their nests upon the ground. Nature has provided them with a plumage which harmonizes so beautifully with the dead leaves of our forests that it is a difficult matter to distinguish them. For this reason very few are molested by their enemies, especially those that hunt by sight alone. Some, no doubt, are destroyed by such wild animals as depend upon scent to find their prey, but the number thus destroyed is insignificant when compared to the great number that perish otherwise. Under our present game laws farmers can protect them even during the open season by simply refusing to give hunters written permission to hunt upon their premises. Very few farmers hunt quail. Man never makes war upon his best friend and all farmers look upon them as such. Quail hunters always hail from our cities and villages and very few will hunt upon a farmer's premises without the written permission to do so, so that if you refuse the statutory written permission you virtually protect them against hunters.

I think, however, that all will agree with me that more quail perish during severe wintry weather than from all other causes combined. These little birds depend upon the naked ground for their food. When the ground is covered, as it often is, with several inches of snow for many days they become so weakened by starvation that they fall an easy victim to extremely cold weather. In many places in Ohio and some of the other states farmers provide shelter for them by standing shocks of corn or corn fodder against the fences around their cornfields and during a time of deep snow keep these sheltered places well supplied with food. The little fellows soon find such places and will visit them every day until the snow is gone. I once wintered a flock of quail in this way without the loss of more than two or three out of a flock of twenty-three, and I felt myself well repaid for the little trouble and feed the following summer by the cheery call of "Bob White" at nearly all hours of the day.

In conclusion I want to urge all farmers to protect these friends of ours against hunters, protect them against starvation and cold, and declare war against the enemies of bird life, and I believe that in a few years our birds will again increase in number and take up the work of exterminating our insect pests.

SOWING AND REAPING.

BY MRS. J. T. BROWNE, CENTERVILLE, OHIO.

[Read at the Farmers' Institute Held at Centerville, Montgomery County, February 26 and 27, 1904.]

Sowing and reaping! What a picture is presented to the mind of one who has lived upon a farm by these words! How plainly we can see the hurry and bustle of the early morning hours, the long lines of clean-cut furrows, the careful preparation of the soil, into which the thrifty farmer places his most perfect grain, trusting on the promise of the "seed time and harvest." We can see the paths left by the drill across the brown field, which soon become streaks of bright green under the magic hand of nature. We can see the bare earth becoming thickly carpeted with a mat of emerald, which changes before our eyes every day, growing and growing, covered during the winter with a warm blanket of snow, fed by mother earth, watered by the dew and gentle rain, caressed by the soft wind and kissed by the bright sun, until we have at last the field of ripened grain waiting for the reaper. Nature has now finished her work and the hand of man must gather what he has sown. What days of toil again we see, for now comes the harvesting, the threshing and the gathering into granaries of the promised hundredfold.

How parallel are the worlds of the material and the spiritual! As in the material world, "what a man soweth, that shall he also reap;" even so in the very transactions of everyday life, in work or play, in buying or selling, we plant and tend seeds of right or wrong, of truth or falsehood, of honesty or dishonesty, which in afterlife we must reap.

This is true in the history of nations as well as in that of individuals. Study the history of any nation and you will find it has reaped as it has sown. There is an amusing little poem going the round of the daily press which gives us as Americans subject for thought as well as gratulation. The author first speaks of meeting "an amusing sort of fellow," who, he says, certainly "could not be worse," and who, in answer to the question where he hails from, replies, "Porto Rico, U. S. A." Again, he meets on Broadway a heathenish looking fellow "with a lot of tropic garments and a most outlandish air" who replies to the same question, "Honolulu, U. S. A." He puts the query to a man with a big sombrero and a lamentable lack of clothing who asks him for a quarter, and is answered, "Santiago, U. S. A.." In a hotel he meets an important looking man with a heavy iron box and an overcoat lined with fur whom he presumes to be a miner and who registers, "Circle City, U. S. A." Next he sees a saddle-colored heathen, wearing earrings in his nose and linen cuffs around his ankles, who answers the question where he is from by "From Manila, U. S. A." Then in his surprise and bewilderment the author concludes by saying:

"And when next you ask a fellow
Where he's from he's bound to say,
With a lordly kind of flourish,
'All Creation, U. S. A.' "

But let us see if we can find from whence comes this host of people proudly claiming citizenship in the greatest repuglic of the ages. In the early years of the seventeenth century we see crossing the stormy Atlantic and landing on the coast of New England a band of pilgrims seeking a place to worship God "according to the dictates of their own conscience" and bringing with them their motto of high thinking and plain living. We follow their struggles and sacrifices and the struggles and sacrifices of others who, like them, have found a home in the new world, until in due time the soil is ready for the planting of the doctrine that "All men are created free and equal." We see that thought grow, watered by the best blood of America at Bunker Hill, Gettysburg and San Juan, and cultivated by statesmen and people from the days of Washington to Roosevelt, until the tiny seed has produced a mighty harvest, glorifying "All Creation." What a glorious thing to be an American and to enjoy and benefit by the fruits of such holy purposes!

Many years ago there lived and wandered through Pennsylvania, Ohio and Indiana an eccentric character best known to us as Johnny Appleseed. He devoted his life to doing good, and among other acts of his we notice two which he thought would prove a blessing to mankind. Having great faith in the medicinal qualities of fennel, which he probably found in some part of Pennsylvania, he scattered the seed of this noxious weed near the homes of the early settlers. Poor old man! he inflicted upon the farmer a positive evil where he sought to do good, for the rank fennel, with its pretty but pungent blossoms, lines our roadsides, borders our lanes, steals into our dooryards and is a pest second only to the beautiful daisy. But he did another thing which has been a benefit and a blessing and which gave him his name. He carried with him through the forests of Ohio and Indiana great quantities of apple seeds, which he planted in cleared places along the streams, and when the early settlers came they found Johnny Appleseed's nurseries ready to furnish the young trees for their orchards. What a noble service he did for mankind! We may well say with the poet:

"For, child, though it seemed a trifling deed
For a man just to plant an apple seed,
The apple tree's shade, the flowers, the fruit,
Have proved a blessing to man and brute."

Why have I told you this story of Johnny Appleseed? To show you, if you need to be shown, that we reap what we sow; that, whether we sow in well-intentioned ignorance the seed of the fennel, or, with a better understanding, the seed of the apple, the harvest will be true to that which has been sown.

Both material and spiritual growth are necessary for the complete development of the individual, but if we do not make the material subservient to the spiritual we miss the real purpose of life. The home is the place for the growth and development of those virtues and purposes which make a harvest worth reaping. One writer has said that for the proper development of a child physically, mentally and morally he would begin with the grandparents. If this is true we of this generation should see to it that our grandchildren are started in life with a proper idea of its duties and privileges, and this we should do by living right ourselves and by properly training our children. We should see to it that rooted and grounded in the very fiber of their beings are those virtues which elevate and ennoble. We should teach them a proper idea of the dignity of labor, a due care for the necessary provision for the comforts of life, and the cultivation of mind and heart, that the harvest of old age may be full of good works.

What sadder sight is there than to see one who has sown in his youth the seeds of idleness and sloth coming to old age and reaping the harvest resulting therefrom, opportunity gone and, however great the desire, too late to rectify matters? As well might the farmer who has sown cheat in his field in autumn expect to reap a harvest of golden grain, or the old farmer of the song plant pumpkin seed and expect God in answer to his prayer to send him a field of corn, as for a youth to sow "wild oats" and expect in old age to reap the fruits of industry and a pure life. Have I made my thoughts plain to you? God's word declares it and all natures proves it, "Whatsoever a man soweth, that shall he also reap."

Ohio Department of Agriculture,
Columbus, Ohio, December 31, 1903.

To His Excellency, George K. Nash, Governor of Ohio.

Sir:—In compliance with law, the Ohio State Board of Agriculture herewith submits the following report of the Division of Nursery and Orchard Inspection for the year 1903.

The annual report of the Chief Inspector has been filed and is herewith appended. This includes a detailed summary of the work of the year, also a brief statement of the distribution in Ohio of the pests specifically mentioned in the law and a list of Ohio nurserymen. During the year an average force of six Assistant Inspectors has been maintained.

The experience in the execution of this law since its passage indicates that greater benefit can be derived by the people of the state by broadening it in such a manner as to provide for the investigation of outbreaks of dangerously injurious insect pests and plant diseases, the testing of remedies for their control and practical demonstration work in the field. Provision should also be made for issuing official certificates of fumigation to nurserymen.

It is therefore recommended that changes be made in the present law in order to provide for the work indicated in these suggestions.

Respectfully submitted,
Ohio State Board of Agriculture,
By W. W. Miller, Secretary.

REPORT OF THE CHIEF INSPECTOR OF NURSERIES AND ORCHARDS.

Ohio Department of Agriculture,
Division of Nursery and Orchard Inspection.
Columbus, Ohio, December 31, 1903.

Hon. W W. Miller, Secretary Ohio State Board of Agriculture.

Sir:—I herewith transmit my second annual report as Chief Inspector of Nurseries and Orchards, which covers the operations of this Division for the year 1903.

The number of nurseries inspected during the year has increased considerably, as will be noted in the list of owners to whom certificates of inspection have been issued. A large amount of time has been spent in carrying on this work and the nursery stock in the state has been examined more thoroughly than ever before.

Petitions for orchard inspection have been received from many of the principal fruit growing sections of the State and some complaints and inquiries have come from cities where the San Jose scale is doing great damage to fruit and ornamental trees and shrubs. In order to furnish necessary information a bulletin has been prepared for distribution in infested cities and towns concerning the habits of this insect and the methods that should be employed for its control.

The amount of correspondence from Ohio and other states is steadily increasing and may be taken as an indication of the growth of this division and the influence that it is exerting.

Particular attention is called to the section of this report which gives the distribution of the plant diseases and insect pests mentioned in the Nursery and Orchard Inspection Law, as this will give some idea of the magnitude of the problem of securing proper control.

NURSERY INSPECTION.

During the period from January 1 to June 1, 1903, twenty-seven applications for nursery inspection were received and thirty certificates were issued, thus making the total number of applications received from June 1, 1902, to June 1, 1903, two hundred and sixty-eight, and the total number of certificates granted during this time two hundred and sixty-one. Seven certificates were withheld for various reasons.

Applications received from June 1 to July 1, 1903	300
Applications received from July 1, to December 31, 1903	35
Total	335

Nurseries inspected from July 16 to December 31, 1903	331
Nurseries not inspected to December 31, 1903	4
Certificates issued	318
Certificates held until the nursery or premises has been properly treated or until the cost of inspection has been paid	13

A careful estimate of the acreage of growing stock was made by each inspector after the examination of each nursery was completed. Four thousand seven hundred and seven acres of stock and nearly two thousand acres of orchards were examined in the nursery inspection work. Eighty greenhouses were also inspected.

The following numbers of orchard trees and shrubs on nursery premises have been destroyed by the owners during the year:

Trees destroyed for peach yellows	1,849
Trees destroyed for black knot	82
Sprouts destroyed for black knot	284
Trees destroyed for San Jose scale	2,376
Shrubs destroyed for San Jose scale	49
Currants destroyed for San Jose scale	506
Total destroyed	5,146

Three thousand eight hundred and eighty feet of osage orange hedge infested with San Jose scale has also been destroyed.

Nursery stock has been condemned and destroyed by the owners, as follows:

Trees infested with San Jose scale	9,315
Trees infested with Putnam scale	4
Trees infested with scurfy scale	58
Trees infested with oyster-shell scale	26
Shrubs infested with oyster-shell scale	14
Trees infected by crown gall	852
Total destroyed	10,269

Nursery trees that were found badly infested with the Putnam, scurfy or oyster-shell scales were ordered destroyed. In cases of slight infestation the owners were given directions as to the best remedies to apply to clear their stock of these insects. In several cases where raspberry and blackberry plants were infested to a considerable extent with the rose scale, certificates of inspection were withheld until the owners gave written assurance that no infested plants would be sold and that their growing stock would be thoroughly sprayed.

Trees, shrubs, plants and vines have been fumigated with hydrocyanic acid gas in accordance with the directions of this division, as follows:

Trees (fruit and ornamental)	801,135
Shrubs (ornamental)	45,595
Currants and gooseberries	69,785
Plants (raspberries and blackberries)	271,625
Vines (grapes, etc.)	202,502
Total	1,390,642

This method of treating nursery stock is becoming more general and most of the larger nurserymen are now equipped so as to supply fumigated stock to the trade.

During the past year two cases have been reported where diseased stock has been shipped from Ohio nurseries. In one case a few trees were found slightly infested with the San Jose scale and in the other a part of a shipment was affected with crown gall. Considering the large amount of stock that is handled by Ohio nurserymen this is an exceptionally good record.

A shipment infested with the San Jose scale has been received from Michigan and one from New York, and one each has been received from Indiana and New York that were infected by crown gall.

ORCHARD INSPECTION.

One hundred and twenty-six petitions for orchard inspection have been received during the year from the following counties: Ashtabula, Belmont, Clermont, Columbiana, Cuyahoga, Delaware, Erie, Fairfield, Fayette, Franklin, Fulton, Gallia, Hamilton, Lake, Lucas, Montgomery, Morgan, Ottawa, Richland, Ross, Seneca, Stark, Summit, Union and Wayne.

One hundred and twenty-three of these petitions request inspection for the San Jose scale, and one each of the remaining were for canker worm, peach yellows and black knot. The premises covered by eighty-eight of these petitions have already been inspected, also a considerable area surrounding the nurseries, but more work of this character remains to be done this winter. Four hundred and sixty-four orchards and premises have been inspected requiring a tree-by-tree examination.

Trees inspected	243,830
Shrubs inspected	1,275
Currants and gooseberries inspected	6,977
Sprouts inspected	2,280
Vines inspected	3,158
Total	257,520

Forty-six thousand six hundred and fifty-six feet of osage orange hedge have also been inspected.

During the year trees and shrubs have been destroyed or treated in accordance with the directions of this division as follows:

	Destroyed.	Treated.	
For peach yellows	1,098	......	Trees.
For black knot	5	1,311	Trees.
For black knot	800	......	Sprouts.
For San Jose scale	1,448	190,289	Trees.
For San Jose scale	125	......	Sprouts.
For San Jose scale	....	179	Shrubs.
For San Jose scale	....	2,059	Currants and Gooseberries.
Total	3,476	193,838	

Five and one-half acres of badly infested and overgrown nursery stock on orchard premises and three hundred feet of osage orange hedge have been destroyed and seven thousand four hundred and forty-six feet of osage orange hedge have been treated for San Jose scale.

There seems to be a general disposition on the part of owners of orchards to apply treatment, but during the past year a considerable amount of spraying was done in such an imperfect manner as to be of little value for holding the scale in check, and such treatment has not been accepted by this division as satisfactory. In cases where poor work was done the owners were required to re-spray, and in some instances trees were treated three times before the work was acceptable. Among the larger orchardists it was found impossible to require another treatment in the spring, as the season was so late that spraying would cause injury to the trees, but agreements have been made that the work will be done in a satisfactory manner this winter.

GENERAL INSPECTION FOR THE CANKER WORM.

Since the passage of the present law, which definitely names the canker worm as one of the dangerously injurious insects, only one petition has been received requesting inspection for this pest. This may be due, in part, to the fact that the damage caused by this insect was considerably less in 1903 than it had been for the past few years. It is doubtful, however, if any very great good would result from the inspection of premises if petitions were filed, for the reason that complaints would not be made until the time for successful treatment had passed. Realizing this fact, the assistant inspectors were sent during the month of May to the apple growing sections of the state, to advise the owners of orchards relative to prompt treatment for this pest. In this way much assistance and advice was given and many owners were induced to spray early enough to do effective work. Much valuable data were also collected concerning this insect.

In carrying out this work over one hundred and fifty infested orchards were examined, containing about thirty thousand trees.

GENERAL CONDITION OF ORCHARDS IN OHIO.

In the agricultural statistics, collected by township assessors and compiled by the county auditors, for publication by the Ohio Department of Agriculture, will be found the following data relative to the acreage of orchards in Ohio.

ORCHARD ACREAGE IN OHIO, 1899-1902.

Year	Apple	Peach	Pear	Cherry	Plum	Other Fruits	Total
1899.............	315.486	30,809	3,178	1,398	1,685	7,206	359,257
1900.............	302,186	37,827	4,091	1,510	1.991	6,587	354,192
1901.............	277,695	40,621	4,359	1,299	2,038	5,558	331,570
1902.............	264,349	27,376	3,508	1,071	1,426	5,088	302,818

This table shows that a steady decrease has taken place in the acreage of fruit since 1899, the total shrinkage in area being 56,444 acres. Perhaps some allowance should be made, for it is probably true that these statistics are more carefully gathered at the present time than they have been in the past.

The figures are significant to any person who is acquainted with orchard conditions in this state, as they show the tendency toward orcharding by specialists, who use the latest and most improved methods.

The causes for this decrease are not hard to find, and one of the most prominent ones is the destruction to the orchards and the fruit caused by insects and plant diseases. Among these pests which are of prime importance may be mentioned the San Jose scale, canker worm, codling moth, peach yellows, black knot, pear blight and the rot that attacks the plum and the grape.

It is fast becoming an impossibility to raise a profitable crop of fruit without taking active measures to destroy these pests, and, as a result of their depredations, many fruit growers have become so discouraged that they are abandoning the business and turning their attention to other lines of work.

GENERAL INSPECTION OF COLUMBIANA COUNTY.

In order to ascertain the condition of the orchards, a county was selected and a general inspection was made in order to determine the extent to which they were affected by pests of this description. For this purpose Columbiana county was chosen because the statistics showed that the acreage of fruit was considerably above the average for the counties of the state, and also because it contained only two localities where the San Jose scale was known to exist. New plantings are being continually made in this county, and it was thought that a general inspection of all the orchards would tend to show whether compulsory inspection of nursery stock had been efficient in preventing the introduction of this insect.

The table gives the average acreage of the orchards of all the counties in Ohio, the acreage of orchards in Columbiana county reported by the county auditor for the year 1902, and the acreage reported by the state inspectors.

	Apple	Peach	Pear	Cherry	Plum	Other Fruits	Total
Av. per County.	3,004	311	40	12	16	58	3,441
Col. Co. 1902.....	5,782	208	15	4	23	162	6,194
Insp.Rep.Col.Co.	5,211	636	72	41	95	111	6,166

A study of the table shows that the total acreage reported by the inspectors does not differ very greatly from that compiled from the reports of the assessors. The greatest differences occur in the acreage of apple and peach, and this is undoubtedly caused by the fact that many apple orchards have peach trees planted between the rows as "fillers," the latter to be removed before the apple trees come into bearing.

SCOPE OF THE WORK.

The plan followed was to make a general inspection of every orchard, taking the name of the owner and the acreage of the fruit given under the different headings in the table, and estimate the percentage of the acreage affected with insect pests or plant diseases.

In case such pests were found, the owner was informed of their presence by the inspector and advised as to the best remedies to be applied. No city or town premises were included, and, during the entire work in the county, only one orchard was found infested with San Jose scale in addition to those already known.

The work of the codling moth was found in most of the apple orchards, but the evidence shows that the canker worm was not present in sufficient numbers, except in one locality, to do serious injury, although it has been a destructive pest in some sections in the past.

The following table gives the acreage of orchards inspected and the percentage of affected trees in the different townships.

Township	Apple	Peach	% Yellows	Pear	% Blight	Cherry	% Black-knot	Plum	% Black-knot	Other fruits
Butler	470	20	38%	5.25	4%	1.38	0	3.50	0	.50
Centre	249	93	26%	.75	0	1.50	0	10.62	T	2.00
Elkrun	520	86	40%	24.25	T	2.50	0	3.25	15%	21.13
Fairfield	839	13	39%	3.25	2%	12.00	0	5.50	1%	4.00
Franklin	74	2	55%	.75	0	1.00	0	2.00	10%	1.00
Hanover	355	47	52%	7.00	51%	1.00	0	16.50	2%	3.50
Knox	251	21	34%	2.25	T	2.00	0	2.75	T	3.50
Liverpool	30	13	8%	.00	0	.25	0	.75	2%	1.00
Madison	183	43	53%	3.00	0	3.50	0	7.50	5%	.25
Middleton	307	65	40%	4.50	7%	5.50	0	10.00	4%	1.50
Perry	143	6	24%	.75	0	1.25	0	2.25	T	.00
Saint Clair	101	44	25%	.00	0	1.50	0	1.00	0	3.50
Salem	379	21	39%	.00	0	.00	0	.50	0	.00
Unity	623	34	41%	16.50	14%	5.37	0	20.25	4%	63.94
Washington	68	17	30%	.00	0	.00	0	1.50	60%	.00
Wayne	145	32	47%	.00	0	1.25	5%	3.50	15%	.00
West	331	28	46%	.37	T	.25	0	.63	T	2.00
Yellow Creek	143	41	53%	4.50	0	.00	0	3.25	11%	3.00
Total	5211	636	39%	72.00	9%	41.00	T	95.00	5%	111.00

The peach trees in this county are seriously affected with the yellows, the trees on nearly 40 per cent. of the entire area planted being diseased. The older ones are in a dying condition, but the young trees are fairly healthy.

Many of these orchards are planted in isolated localities, but some owners have planted young trees near old and badly infected orchards, so that unless the latter are promptly removed and burned there is little hope of preventing the disease from spreading to new orchards.

Pear blight is present 9 per cent. of the area planted being affected. This disease requires prompt pruning and burning of the affected parts in order to secure its control. If the diseased branches are allowed to remain it is only a matter of time when suitable conditions will arise and widespread destruction will result.

The black knot has done little damage to the cherry, but about 5 per cent. of the plum trees were found affected. It can be readily controlled, if the pruning and burning of affected parts is attended to promptly, but on account of its common occurrence growers often fail to appreciate the amount of damage that it is capable of doing.

The small fruits, such as currants, gooseberries, raspberries, blackberries and strawberries, were found as a rule in good condition.

The data obtained from this inspection is of considerable value, and the information given to the owners should result in a united effort to fight these pests and secure better orchard conditions in this county.

REMEDIES FOR THE SAN JOSE SCALE.

Owing to the diversity of opinion concerning the best remedies to be applied for the control of the San Jose scale, it has been considered desirable and necessary to test the spraying mixtures that were thought to be of particular value. This has resulted in new facts being brought to light concerning the best remedies that are suited to Ohio conditions, and the results have already been used in making recommendations and requirements for treatment.

Washes made of lime and sulfur, lime, sulfur and salt and lime, sulfur and blue vitriol have been tested and found to be satisfactory for controling the San Jose scale. They also have considerable value as fungicides and have proved very efficient in controlling the leaf curl, which is a fungus disease of the peach. As a result of experimental work, and of practical work by fruit growers, it has been demonstrated that these washes are very effective for destroying the scale, and they will doubtless replace all others, as they can be prepared and applied at moderate cost and do not endanger the health or growth of the trees. Many fruit growers have built plants in which to prepare these washes in a wholesale manner so that, in some of the large fruit sections, efficient spray mixtures can be bought ready for use at a moderate price.

PREPARATION AND USE OF INSECTICIDES.

The "California," or Lime, Sulfur and Salt Wash—Formula: Fifty pounds stone lime, 50 pounds ground sulfur and 50 pounds of salt. Slack the lime in a little hot water, gradually adding the sulfur, and stir vigorously; *boil* one hour. Add the salt, *boil* fifteen minutes, strain, dilute with hot water to make 150 gallons of wash and apply.

Spraying may begin as soon as the leaves have fallen, and if the results are not entirely satisfactory another application can be made in early spring. When applied during the winter this wash has never been known to injure trees. It corrodes brass and copper, hence an iron pump and similar fittings should be used. Very little injury will result to a brass pump, however, if care is taken to thoroughly wash it by running clear water through after each day's spraying is finished. *Never* attempt to boil this wash in a brass or copper kettle. In case large quantities of the wash are required it will probably be found advisable to use steam to do the boiling.

The "Oregon Wash" is made in the same way, but the salt is replaced with four pounds of copper sulfate.

The experience of the past year indicates that the California wash is just as effective, if the salt is omitted, and as this reduces the time of boiling to one hour, it is of some advantage to use this modification. It is advisable to dilute the wash after cooking with hot water, and, although good results have been obtained by diluting with cold water, the former course is advised, as the mixture will spray more easily. The leaf curl cannot be controlled by spraying with crude oil.

PLATE I

Plant for boiling the Lime and Sulphur Washes in Canada by the use of a traction engine (Photo by Mr. George E. Fisher, Freeman, Ontario, Canada.)

No objection is made to the use of whale oil soap mixture or of crude or refined petroleum, and in some special cases it may be practicable to use these materials, but in most cases it is believed that one of the lime and sulfur washes above mentioned will be found more satisfactory.

NATURAL ENEMIES OF THE SAN JOSE SCALE.

Continual study in this country has failed to reveal any natural enemies that attack this insect to a sufficient extent to reduce its numbers appreciably or assist materially in its control.

During the fall of 1900 a few specimens were found at Dayton, Ohio, that were being destroyed by a small four-winged parasitic fly known as *Aphilinus fuscipennis.* This parasite is so small that it is able to feed on the insect beneath the scale and passes through its transformations in this situation.

Two native species of ladybirds have been found feeding on the scales. The common twice-stabbed ladybird (*Chilocorus bivulnerus*), which is black in color, with a red spot on each wing cover, is sometimes quite abundant. A tiny black beetle belonging to the same family, which is known as *Pentilia misella,* is occasionally abundant in orchards and feeds on the scale to some extent.

During the summer of 1901 investigations were made in Japan and China by Mr. C. L. Marlatt, Assistant Entomologist to the United States Department of Agriculture, to determine, if possible, the native home of the San Jose scale, and ascertain whether its natural enemies were keeping it in check. After several months of explorations he succeeded in demonstrating that this insect is a native of northern China and that it is greatly reduced in numbers by a small ladybird, which very closely resembles our twice-stabbed species. Several shipments were made to this country, and enough specimens were successfully reared so that shipments were made to different parts of the United States in order to start colonies of this beneficial insect.

Through the courtesy of Dr. L. O. Howard, Entomologist to the United States Department of Agriculture, a shipment was received in August, 1903. Only three of the insects survived the trip from Washington, D. C., and as one of these escaped only two were left to start the colony. These were placed in an infested orchard in Clermont county. An examination made October 28 showed that twelve beetles were present, one generation having been produced. The question of their ability to withstand the winter and of their future utility remains to be demonstrated, and it is, therefore, apparent, that orchardists should not fail to treat their trees in the hope that the beetles will be able to keep the scale in check.

The final outcome of this importation is awaited with interest, for if these beetles are able to survive our climate another beneficial species will be added to the fauna of the state.

PUBLICATIONS.

During the past year the following papers have been published by the chief inspector, some of which are of a scientific character:

"The Control of Horticultural Pests."—(Thirteenth Annual Report, Ohio State Farmers' Institutes, 1903.)

"The Necessity of Uniform Methods of Inspection and Treatment of Nursery Stock."—(Report of the Annual Meeting of the Association of Agricultural Colleges and Experiment Stations at Washington, D. C., November 18, 1903.)

"Notes on the Introduction of the Asiatic Ladybird (*Chilocorus similis*) in Ohio."—(Report of the Annual Meeting of the Ohio Academy of Science, at Granville, Ohio, November 27, 1903.)

"Report of Nursery and Orchard Inspection in Ohio for 1903."—(Report of the Annual Meeting of the Ohio State Horticultural Society at Delaware, Ohio, December 9—11, 1903.)

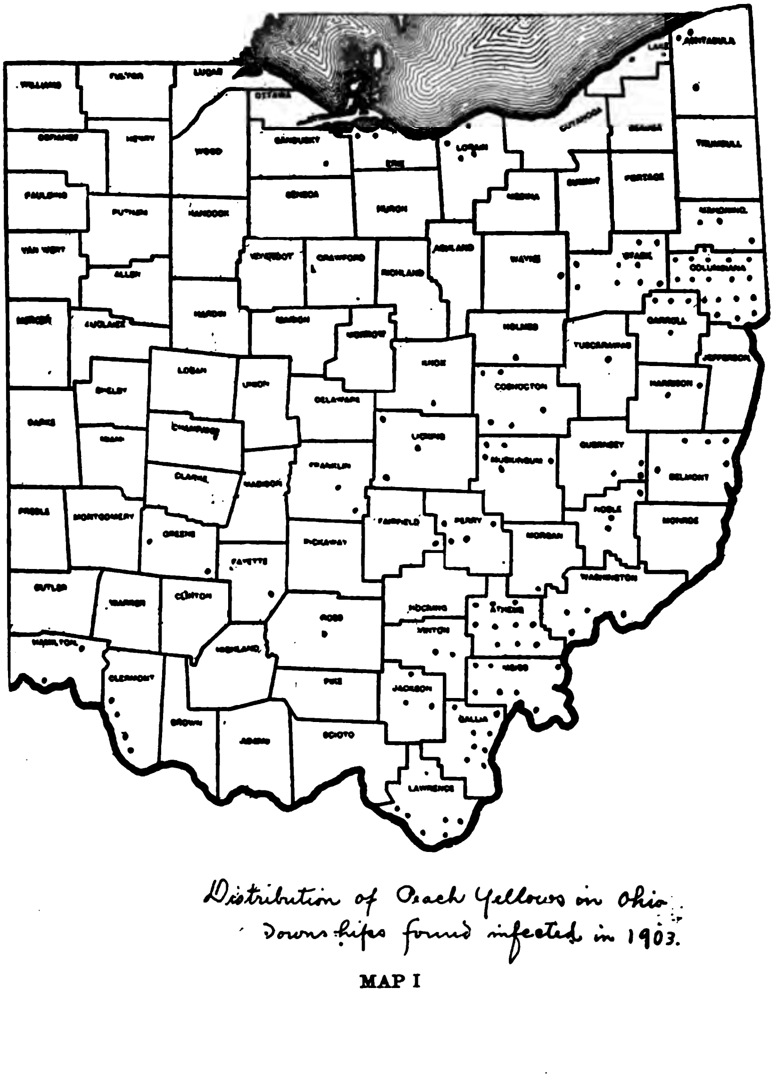
"The Use of the Lime and Sulfur Washes in Ohio."—(Report of the Annual Meeting of the Society for the Promotion of Agricultural Science at St. Louis, Mo., December 30, 1903.)

"The Use of Arsenate of Lead for Controlling the Codling Moth."

"Notes on Economic Insects for the Year 1903."

"Notes on the Treatment of Nursery Buds."—(Report of the Sixteenth Annual Meeting of the Association of Economic Entomologists at St. Louis, Mo., Dec. 29—30, 1903.)

"Treatment of the San Jose Scale in Cities, and Suggestions Concerning Desirable Trees and Shrubs for Ornamental Planting."—(Bulletin No. 1, Division of Nursery and Orchard Inspection, Ohio Department of Agriculture.)



Distribution of Peach Yellows in Ohio.
Townships found infected in 1903.

MAP I

DISTRIBUTION OF THE PLANT DISEASES AND INSECT PESTS DESIGNATED AS DANGEROUSLY INJURIOUS IN THE OHIO NURSERY AND ORCHARD INSPECTION LAW.

During the past year a record has been made of the occurrence of these pests within the State, that have been found by the inspectors, so that a general summary could be made in order to throw some light on the magnitude of the problem of securing their proper control. It should be kept in mind that the following records cover the observations of a single year, hence they should serve only as a basis for drawing conclusions as to the distribution of the diseases and insects considered.

PEACH YELLOWS.

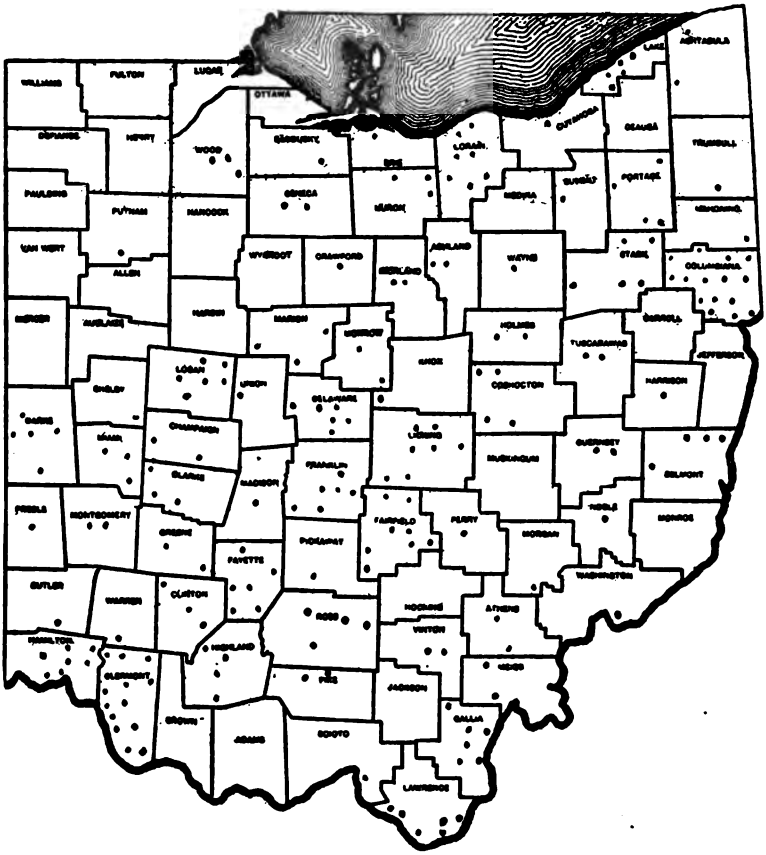
This disease is abundant and very destructive throughout the peach growing section of eastern Ohio, and is found in a few localities in many other counties where this crop is raised. The map shows the distribution as observed during the past year. In sections where climatic conditions are such that only an occasional crop can be expected, the growers have become discouraged and many have practically abandoned their orchards.

The yellows has not appeared in Ottawa and Lucas counties, as far as our records indicate, but if it should become prevalent enormous damage would result, as in many localities in these counties peach growing is the chief support of the people. Self interest would undoubtedly accomplish considerable in keeping orchards in such localities free from this disease, but inspection work of a general character would aid the growers in discovering its presence before it had obtained a foothold and result in promptly stamping it out.

BLACK KNOT.

The black knot is widely distributed and is probably present in nearly every county in the State where plum or cherry trees are grown. In some sections, particularly in the southern part of the State, serious damage has been inflicted in the past, and at the present time few plum trees are being planted.

In Ottawa county, where plums are grown extensively, the black knot is rarely found, but there seems to be no good reason why its



Distribution of Black Knot in Ohio.
Townships found infected in 1903.

MAP II

record for destructiveness in southern Ohio should not be duplicated in case it once becomes established.

CANKER WORM.

The data concerning the distribution of the canker worm has, until the present season, been of a rather fragmentary nature. It was known to exist in certain localities, especially in the valleys of the Miami and Scioto rivers and their tributaries, and in portions of Portage and Geauga counties.

During the season of 1900 and 1901 great damage was done to apple orchards, and at the present time many have not recovered from the effects of the loss of foliage caused by the worms. The abundance and destructiveness of this insect was doubtless the cause, it having been definitely mentioned as one of the dangerously injurious insect pests in the Nursery and Orchard Inspection Law.

There are two distinct species; the Spring and the Fall canker worm. In the course of the observations made this year the Fall species was found in only two localities, and these were near Columbus. The worms were feeding on elm, but in the Eastern states, where this species is very common, the apple is also attacked.

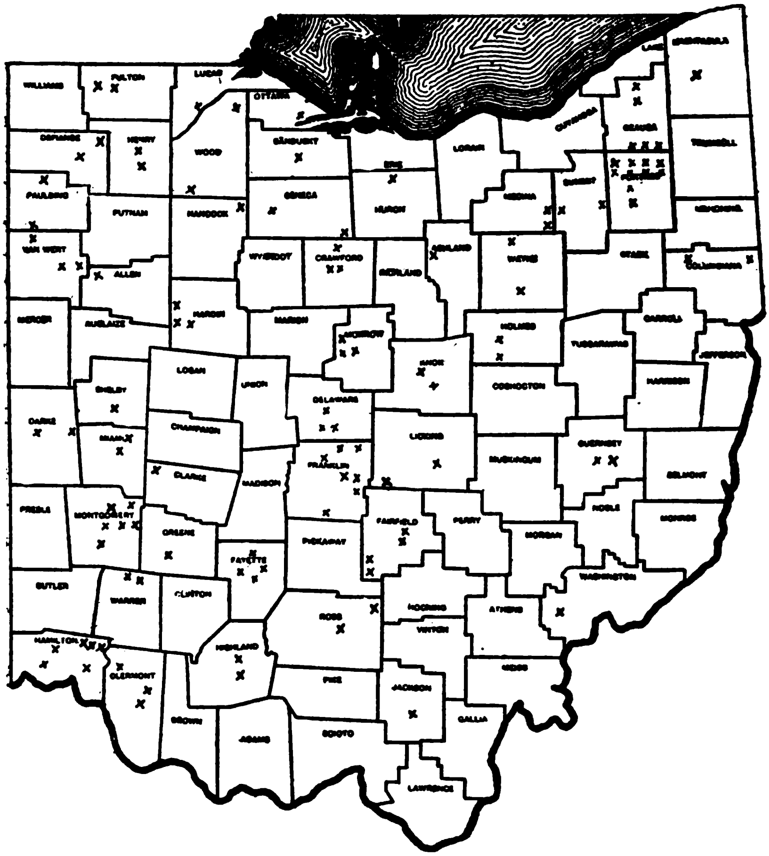
The Spring species is very abundant in many localities, which are well scattered over the State, and it is often found in some orchards while others in the immediate vicinity show no injury whatever. Climatic conditions and natural enemies play an important part in holding this insect in check, but the cause of its local distribution is mainly due to the fact that the females are wingless.

The season of 1903 was not a "canker worm year" in most localities, but the accompanying map, which was compiled from the inspectors' reports, indicates the townships in which colonies were found.

In case this insect is present in an orchard in small numbers it will probably increase until it becomes a destructive pest. If systematic spraying is practiced for the control of the codling moth no additional treatment will be necessary for the canker worm. Considerable careful work will be necessary in order to control this insect in old orchards, especially if they have been neglected in the past.

SAN JOSE SCALE.

During the past year specimens of this insect have been received from several localities in the State where it was formerly unknown, and in order to ascertain the extent of these outbreaks and to learn how successful the owners of infested orchards throughout the state had been in controlling the scale, a general inspection was made of all infested localities. The data concerning several new outbreaks was kindly fur-



Distribution of the Canker worms in Ohio.
x Townships found infested in 1903.

MAP 111

nished by the Ohio Agricultural Experiment Station. A statement of the treatment that had been applied was obtained from the owners and information and assistance of a practical nature was given by the inspectors in order to encourage and assist them in fighting this pest.

A comparison of the distribution of this insect in 1901 with that of 1903 shows that it is present in a greater number of counties than ever before, seven counties having been added to the list during the past two years. One hundred and twenty-nine outbreaks are now known to exist in fifty-five counties, against one hundred and eight outbreaks in forty-eight counties, reported in 1901.

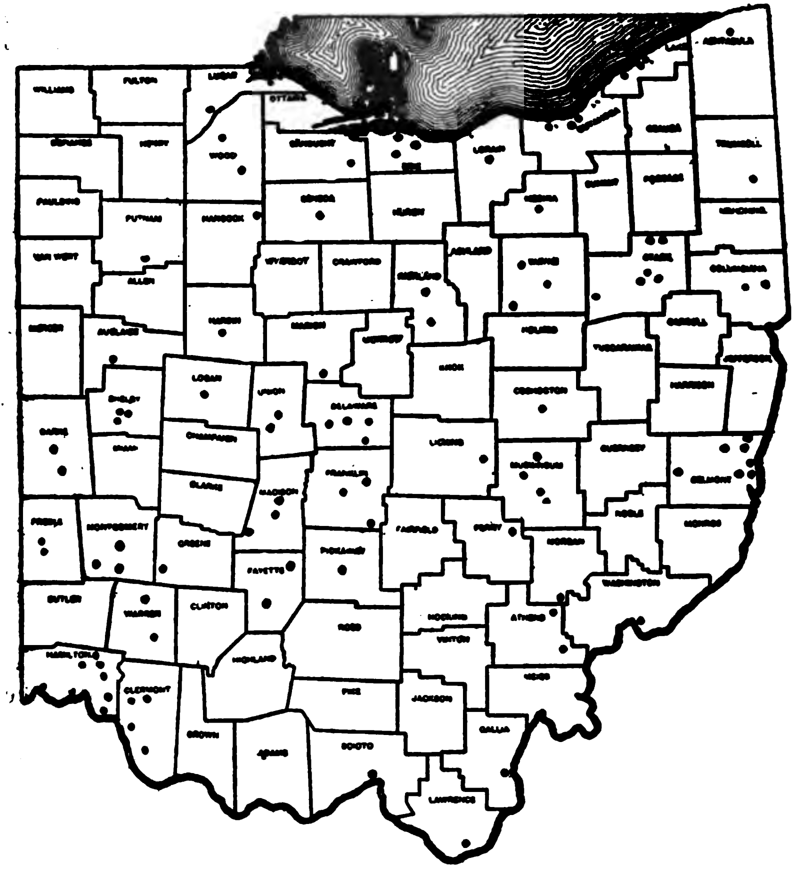
Several outbreaks have been exterminated by the prompt action of the owners, but in most cases the infested trees were found before the insect had spread to any great extent, and as a rule they were destroyed and a close watch has been kept for the scale. This work has been supplemented by examinations made by the State inspectors, and such owners are very fortunate in having freed their premises from this most undesirable insect. The known outbreaks range from the infestation of a few trees in isolated orchards to the general infestation of an entire township or to large areas in cities. In the past two years the scale has spread in the cities and in some of the fruit growing sections where the orchards are nearly contiguous. In other localities it has existed for a considerable length of time and has only recently been discovered.

CITY INFESTATION.

This insect is present in thirty-five cities and towns throughout the State. In many of these localities valuable trees and shrubs are being killed outright or rendered unsightly, and on some premises, where no effort has been made to control the pest, the greater number of the susceptible varieties of trees and shrubs have already been removed. In general, it can be said that the owners of city premises take little interest in the matter, and that this is chiefly on account of the lack of information concerning the insect and a disposition to place the blame for the unhealthy condition of the trees on other causes. The extreme difficulty of obtaining faithful and competent persons to apply treatment in cities makes the problem far more complicated than would be the case if this work could be satisfactorily done by unskilled labor.

LIST OF INFESTED CITIES AND TOWNS.

County.	City or Town.
Ashtabula	**Ashtabula.**
Ashtabula	**Geneva.**
Belmont	**Bellaire.**
Columbiana	**Rogers.**
Cuyahoga	**Cleveland.**
Cuyahoga	**Berea.**
Darke	**Arcanum.**



MAP IV

DISTRIBUTION OF SAN JOSE SCALE IN OHIO IN 1901.

(From Webster, Report Ohio State Horticultural Society, 1901.)

Darke	Greenville.
Delaware	Delaware.
Delaware	Leonardsburg.
Fayette	Martinsburg.
Franklin	Columbus.
Hamilton	Cincinnati.
Hamilton	Delhi.
Hamilton	Home City.
Hamilton	Madisonville.
Hancock	Findlay.
Lake	Mentor.
Lake	Painesville.
Lucas	Toledo.
Madison	London.
Marion	Prospect.
Montgomery	Dayton.
Ottawa	Martin.
Paulding	Paulding.
Putnam	Ottawa.
Putnam	Vaughnsville.
Scioto	Portsmouth.
Stark	Canton.
Stark	Massillon.
Summit	Akron.
Trumbull	Warren.
Warren	Lytle.
Wayne	Shreve.
Wood	Bowling Green.

This division has attempted to assist the owners of such premises as much as possible, but with the limited appropriation it has not been considered advisable or desirable to attempt to carry on systematic inspection work in cities.

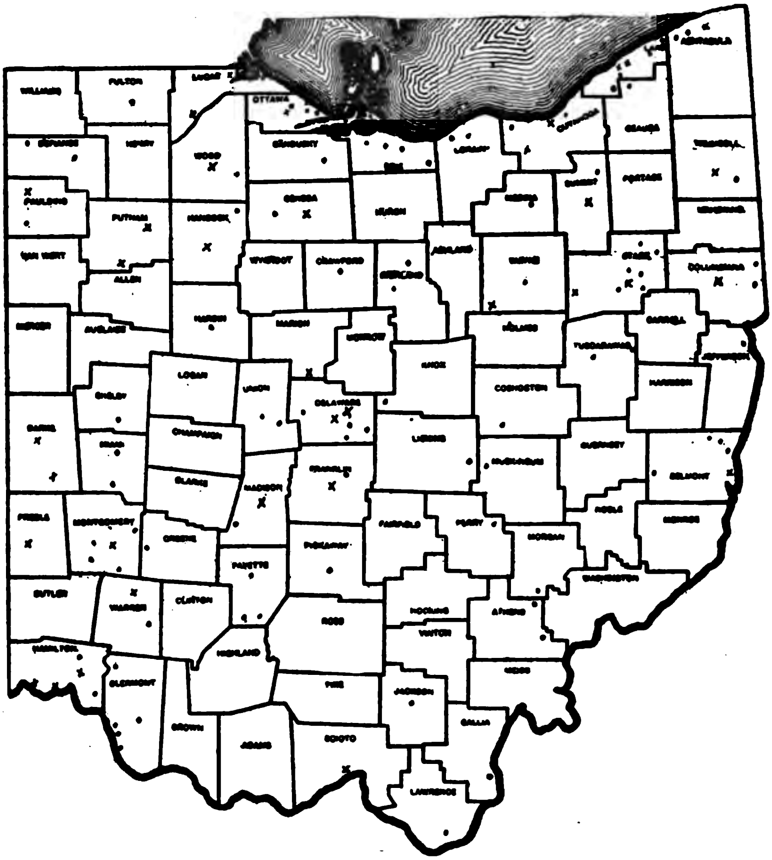
ORCHARD INFESTATION.

Many of the outbreaks in the country are in isolated orchards, and in such places it would appear that the main aim of the inspection work should be to inform and assist the owners in a practical way, so that they can successfully control the scale. In some of the large fruit growing sections this insect is present to only a slight extent, and it is evident that in such localities detailed inspection is of great value to the growers. Where the orchards are thoroughly infested serious damage has been prevented by spraying annually, but there are comparatively few in the State where the amount of infestation has been greatly reduced. This is due, in the main, either to neglect or failure to appreciate the fact that thoroughness is one of the most essential elements in dealing with this insect and that the spray must be carefully made and applied. The problem of control in apple orchards in a serious one, the size of the trees rendering thorough treatment difficult.

In concluding this report I desire to express my appreciation of the work of the assistant inspectors of this division, which has been performed in a most thorough and careful manner.

Respectfully submitted,

A. F. BURGESS, *Chief Inspector.*



Distribution of San Jose scale in Ohio
• Townships found infested in 1903.
× Cities and Towns found infested in 1903.

MAP V

LIST OF OHIO NURSERYMEN.

1903-1904.

Name and Address of Owner.	County.	No. Cert.
Albaugh Nursery & Orchard Co., The, Phoneton, O.	Miami	95
Allen, W. A., R. R. No. 3, Geneva, O.	Ashtabula	75
Almack & Lear, Coshocton, O.	Coshocton	303
Anderson, U. S. G., Howell, O.	Lawrence	260
Armstrong, A. C., Elkton, O.	Columbiana	157
Arnold, S. J., R. R. No. 2, Dayton, O.	Montgomery	146
Ashford, J. C., East Carmel, O.	Columbiana	153
Aultfather, H. H., Minerva, O.	Stark	173
Bailey, E. S., Yellow Springs, O.	Greene	137
Baird & Brady, Troy, O.	Miami	44
Baird, J. W., Wilkesville, O.	Vinton	262
Baker, F. L., North Star, O.	Darke	27
Barber, S. A., Ryansville, O.	Lawrence	263
Barker, J. H. & Son., R. F. D., Middleport, O.	Meigs	234
Barnes, A. & Sons, Pleasant Run, O.	Hamilton	202
Barnes, M. & Co., Groesbeck, O.	Hamilton	208
Barnes, T. J., Sandusky, O.	Erie	8
Barnhart, E. E., R. R. No. 2, Canal Winchester, Ohio	Fairfield	271
Barr, L. M., Dayton, O.	Montgomery	161
Barton, R. A., Rocky Hill, O.	Jackson	181
Bear, Mrs. J. C., R. R. No. 8, Dayton, O.	Montgomery	276
Beery, J. C., Bremen, O.	Fairfield	313
Berk, Theo., R. R. No. 1, Dayton, O.	Montgomery	134
Bernard, A. F., Painesville, O.	Lake	24
Bernard, F. F., Painesville, O.	Lake	12
Berry, P. D., R. R. No. 3, Dayton, O.	Montgomery	257
Birch, J. B., Carrollton, O.	Carroll	187
Black's Nurseries, Bremen, O.	Fairfield	210
Bohlender, Peter & Son, Phoneton, O.	Miami	94
Boice, M. C., Kyger, O.	Gallia	232
Boley, J. T., R. F. D., New Lexington, O.	Perry	316
Bork, Philip, Tiffin, O.	Seneca	22
Bosworth, T. M., Dyesville, O.	Meigs	215
Botkin, S. C., R. R. No. 4, New Carlisle, O.	Clark	82
Bowen, John D., Dexter, O.	Meigs	214
Bowles, Newton, Dexter, O.	Meigs	212
Bowmaster, Frank, Tippecanoe City, O.	Miami	51
Brandt, D., Bremen, O.	Fairfield	183
Brandt, L. M. & Son, Huntsville, O.	Logan	282
Brown Bros., Yellow Springs, O.	Greene	139
Brown, Leroy N., Clyde, O.	Sandusky	292
Buechly, E. M., Greenville, O.	Darke	21
Bull, M. L., St. Paris, O.	Champaign	66
Buren, Andrew V., Bremen, O.	Fairfield	310
Burks, Ambrose, R. R. No. 1, Springfield, O.	Clark	109
Burks, S. L., R. R. No. 1, Springfield, O.	Clark	106
Butts, Marcus, R. R. No. 4, Greenville, O.	Darke	242
Cain, James G. Marietta, O.	Washington	189

Name and Address of Owner.	County.	No. Cert.
Call, S. W., Perry, O.	Lake	70
Campbell, A. E., Elkton, O.	Columbiana	156
Campbell, L. W., Barnesville, O.	Belmont	198
Carr, L. W., 3360 Detroit street, Cleveland, O.	Cuyahoga	3
Carr, M. L. & Sons, Yellow Springs, O.	Greene	138
Carson, William & Sons, R. F. D., Middleport, Ohio	Meigs	235
Cartwright, I. D., Toledo, O.	Lucas	284
Chalfant, J. W. & Son, R. R. No. 1, Centerburg, Ohio	Morrow	224
Champion, H. J., Perry, O.	Lake	40
Christensen, James, 2459 Detroit Street, Cleveland, O.	Cuyahoga	2
Christian, S. B., R. R. No. 1, Bradford, O.	Darke	28
Columbus Nursery Co., 46 Smith Place, Columbus, O.	Franklin	125
Cook, W. W., Perry, O.	Lake	36
Cope, Eliphas, Rogers, O.	Columbiana	151
Cope, H. D. & Sons, East Carmel, O.	Columbiana	152
Cowen Bros., Barnesville, O.	Belmont	196
Cowen, Robert, Barnesville, O.	Belmont	248
Cole, W. B., Painesville, O.	Lake	246
Cox, E. G., R. R. No. 1, Rockwood, O.	Lawrence	239
Crawford, James, New Waterford, O.	Columbiana	266
Crawford, M. Co., The, R. R. No. 2, Cuyahoga Falls, O.	Summit	56
Crow, Harry, R. R. No. 1, Dayton, O.	Montgomery	133
Davis, Russell, Xenia, O.	Greene	136
Day, John, Fremont, O.	Seneca	4
Deeds, Charles V., Ansonia, O.	Darke	26
Demuth, W. M., Box 192, Maumee, O.	Lucas	15
Denlinger, J. L., New Carlisle, O.	Clark	86
Drew, George, Clyde, O.	Sandusky	293
Eaton, L. D., LaBelle, O.	Lawrence	241
Edgerton, W. D., Barnesville, O.	Belmont	199
Elsea, C. R., Lithopolis, O.	Fairfield	228
English, J. R., Ironton, O.	Lawrence	252
Ernst, Charles, Moscow, O.	Clermont	272
Ernst, C. J., Perry, O.	Lake	37
Esterly, Albert, J., Columbiana, O.	Mahoning	317
Esty & Stapleton, Tippecanoe City, O.	Miami	62
Euclid Avenue Nursery Co., East Cleveland, O	Cuyahoga	1
Ewart, W. L., Tallmadge, O.	Summit	309
Ewing, John T., R. R. No. 1, Pomeroy, O.	Meigs	238
Ewing, T. E., Wooster, O.	Wayne	195
Fall, J. C., Twin, O.	Preble	286
Farmers' Nursery Co., The, Phoneton, O.	Miami	100
Farnsworth, W. G., Waterville, O.	Lucas	25
Farnsworth, W. W., Waterville, O.	Lucas	144
Fawley, E. W., Hillsboro, O.	Highland	207
Finck, David, Somerset, O.	Perry	123
Finney, T. T. Millersburg, O.	Holmes	164
Fissel, F. A., & Bro., New Carlisle, O.	Clark	104
Flohr, Manasses, New Springfield, O.	Mahoning	148
Ford Seed Co., Ravenna, O.	Portage	110
Fox, A. B., Greenspring, O.	Sandusky	291
Fox, John & Son, Covington, O.	Miami	42
Frantz, C. & Sons, Cozaddale, O.	Warren	205
Frantz, E. B. & Co., Cedarville, O.	Greene	140
Frantz, Israel & Son., R. R. No. 1, Springfield, Ohio	Clark	107

Name and Address of Owner.	County.	No. Cert.
Freeman, Mrs. A. D. & Son, Phoneton, O.	Miami	244
Freeman, Isaac & Son, New Carlisle, O.	Clark	85
French, A. B., Clyde, O.	Sandusky	30
Friesner, J. D., R. R. No. 1, Lancaster, O.	Fairfield	179
Galloway, Frank, Barnesville, O.	Guernsey	301
Gantz & Harbaugh, Brandt, O.	Miami	99
Gantz, M. L., Brandt, O.	Miami	229
Geyer, J. L. & Son, Norwich, O.	Muskingum	129
Geyer, P. B., Norwich, O.	Muskingum	211
Gold & Evans, Gibisonville, O.	Hocking	188
Good & Reese, The, Springfield, O.	Clark	265
Grabiel, W. H., Rushsylvania, O.	Logan	29
Graves, W. J., Perry, O.	Lake	305
Green, L. E., Medina, O.	Medina	57
Green, L. & Son Co., The, Perry, O.	Lake	102
Guynn, E. L., Glenrose, O.	Clermont	308
Guynn, W. H., Moscow, O.	Clermont	289
Hagler, M. A., Xenia, O.	Greene	135
Halderman, J. W., Brandt, O.	Miami	98
Hamblin, D. D. & E. M. Brewster, Perry, O.	Lake	279
Hamilton, W. G., Hendrysburg, O.	Belmont	269
Hanauer, Frank, Box 513, Dayton, O.	Montgomery	249
Harris, Garrett, Larue, O.	Marion	74
Harrold & Wertz, Dalton, O.	Wayne	193
Hartley, Alonzo & Co., Troy, O.	Miami	50
Hartley & Dollison, Quaker City, O.	Guernsey	171
Hathaway, Wick, Madison, O.	Lake	101
Hathorn, John, Hartsgrove, O.	Ashtabula	76
Hatten, H. C. & F. M., New Carlisle, O.	Clark	79
Haverland, B. H., Pleasant Run, O.	Hamilton	201
Haymaker, A. O., Earlville, O.	Portage	112
Heade & Greider, Brandt, O.	Miami	96
Heikes, George, Tippecanoe City, O.	Miami	60
Hemlock Grove Nursery, R. R. No. 1, Pomeroy, Ohio	Meigs	236
Hemm, George, Sidney, O.	Shelby	19
Highland Avenue Nursery, Salem, O.	Columbiana	114
Hoffman, C. W., R. R. No. 1, Dayton, O.	Montgomery	143
Hoffman, L. F., R. R. No. 1, Dayton, O.	Montgomery	250
Horvath, M. H., Glenville, O.	Lake	290
Hull Bros., Perry, O.	Lake	124
Hunt, Louis, R. F. D., Rockwood, O.	Lawrence	277
Hutchison, John C., Barnesville, O.	Belmont	221
Jackson Nursery, S. S., Station F., Cincinnati, Ohio	Hamilton	203
Jenkins, J., Winona, O.	Columbiana	115
Johnson, Olla, Barnesville, O.	Belmont	197
Kaiser, Fred & Son, Athalia, O.	Lawrence	230
Kalb, George E., Rushville, O.	Fairfield	176
Keckler, S. B., Hillgrove, O.	Darke	20
Kellogg, B. A., East Carmel, O.	Columbiana	155
Kennedy, Perley, R. F. D., Middleport, O.	Meigs	233
Kibby, J. I., Norwalk, O.	Huron	10
Kinney, Thomas, Clyde, O.	Sandusky	307
Kinsey, William N., Kinsey, O.	Montgomery	145
Knauf, Frank, R. F. D., Canfield, O.	Mahoning	147
Knopp, Alvin B., R. R. No. 1, Columbiana, O.	Mahoning	318
Kohankie, H., Painesville, O.	Lake	126
Kohankie, Martin, No. 149 Fobes street, Painesville, O.	Lake	7
Kumler, H. L., Baltimore, O.	Fairfield	89

Name and Address of Owner.	County.	No. Cert.
Kunkler, Nicholas, Bremen, O	Fairfield	182
Kuth, J. S., R. F. D., Richmond, Ind	Preble	158
Langdon, Amos, Howell, O	Lawrence	299
Langdon, Wesley, Howell, O	Lawrence	261
Langdon, W. E., Howell, O	Lawrence	300
Lawrence, E. S., Perry, O	Lake	247
Lawrence, W. R., Marion, O	Marion	73
Leffel, A. D., R. R. No. 4, New Carlisle, O	Clark	83
Lehman, S. J. & Co., Enon, O	Clark	65
Leonard, A. M., Piqua, O	Miami	43
Likens, E. R., Ryansville, O	Lawrence	285
Linn, A. J. & Son, Quaker City, O	Noble	256
Livingston Seed Co., Columbus, O	Franklin	105
Lowery, J. P., Quaker City, O	Noble	304
Lynd, E. T., & J. H. Carrico, Ryansville, O	Lawrence	281
Lynd, James H., Ryansville, O	Lawrence	254
Lynd, W. L., Ryansville, O	Lawrence	209
Lynn, E. E., Salesville, O	Guernsey	172
McNary & Gaines, Xenia, O	Greene	160
McNary, T. W., Cambridge, O	Guernsey	167
McVitty, James, Perry, O	Lake	52
Marshall & Long, Augusta, O	Carroll	174
Marshall, Sylvester & Sons, R. R. No. 5, Athens, O	Athens	220
Martin, Alexander, Ravenna, O	Portage	111
Merriman, B. F., Painesville, O	Lake	54
Meyers, Frank, Geneva, O	Ashtabula	294
Miller, D. J., R. R. No. 5, Millersburg, O	Holmes	166
Miller, John F., White Oak, O	Brown	206
Mitchell, W. T. & Son, Beverly, O	Washington	185
Mohawk Fruit & Preserving Co., The, Lucas, O	Richland	92
Montgomery, Cary W., Box 4, Newark, O	Licking	122
Mooney, E. K., Madeira, O	Hamilton	204
Mooney, S. W., Madeira, O	Hamilton	268
Moore, Alexander, Barnesville, O	Belmont	273
Moore, James A., Malaby, O	Gallia	275
Moore, Samuel R., Zanesville, O	Muskingum	130
Morland, M. B., Rogers, O	Columbiana	150
Morningstar Estate, J. H., Greenville, O	Darke	71
Morrison, A. D., Proctorville, O	Lawrence	240
Morrison, J. R., Cadiz, O	Harrison	298
Motter, Fred, Tippecanoe City, O	Miami	61
Mox, Albert, Delphos, O	Van Wert	17
Muchmore, W. O., Fremont, O	Seneca	191
Munnell, J. H., Ontario, O	Richland	90
Musselman, W. L., New Carlisle, O	Clark	127
Neff, J. P., R. R. No. 4, Dayton, O	Montgomery	131
Nelson, Frank & Fred, Salem Center, O	Meigs	213
Nichol, A. M., Granville, O	Licking	121
Nicholson, C. F., Rocky Hill, O	Jackson	180
Niemann, C. G., Port Clinton, O	Ottawa	68
Noland, G. T., Wakatomika, O	Coshocton	270
Noland, J. P., Peninsula, O	Summit	55
Noland, W. A., West Carlisle, O	Coshocton	227
Norman, T. R., R. R. No. 1, Panesville, O	Lake	38
Notestein, J. B., Creston, O	Wayne	194
Osbourne, W. R., Baltimore, O	Fairfield	88
Overholser, Jerry, Alpha, O	Greene	141
Parker, T. E., Barnesville, O	Belmont	200
Parry, F. R. & Sons, Sarahsville, O	Noble	168
Pearson, George, Troy, O	Miami	49

Name and Address of Owner.	County.	No. Cert.
Peters, George & Co., Troy, O.	Miami	45
Peters, W. J., & Co., Troy, O.	Miami	47
Pickett, G. S., Clyde, O.	Sandusky	69
Pittinger, George, Clyde, O.	Sandusky	14
Plattner, Henry, St. Mary's, O.	Auglaize	314
Plum, D. S., & Louis Hileman, Nova, O.	Ashland	91
Plummer, D. P., R. R. No. 2, Bellefontaine, O.	Logan	33
Post, D. F., Painesville, O.	Lake	178
Raby, W. & Son, Welcome, O.	Holmes	165
Rasor, George P. & Co., Wadsworth, O.	Medina	58
Rathbun, Bert, Clyde, O.	Sandusky	243
Rathbun, N., Clyde, O.	Sandusky	13
Reeves, E. A., Station B, Cleveland, O.	Cuyahoga	11
Rhynard, Thomas T., Rossville, O.	Darke	23
Rice, James M., Fremont, O.	Seneca	5
Richey, L. L., Pataskala, O.	Licking	119
Richey, W. T., Mooresville, Ind.	Licking	120
Riley, J. N., Washington C. H., O.	Fayette	116
Riverside Nursery & Orchard Co., Troy, O.	Miami	48
Robinson, R. N., Sidney, O.	Shelby	32
Rocky River Nursery, Clifton Park, O.	Cuyahoga	283
Rogers, L. S., Bowling Green, O.	Wood	103
Rogers, Marshall H., Jamestown, O.	Greene	142
Royer, William, R. R. No. 1, Dayton, O.	Montgomery	132
Russell, F. R., Clyde, O.	Sandusky	72
Sage, J. M., Chardon, O.	Geauga	59
Sawyer, Frank, Norwalk, O.	Huron	9
Scharff, W. N., New Carlisle, O.	Clarke	84
Schramm, Charles, Athalia, O.	Lawrence	251
Schwartzwalder, M. & Son, Pomeroy, O.	Meigs	237
Schweitzer, W., Pandora, O.	Putnam	16
Shaeffer, George E., West Rushville, O.	Fairfield	159
Shafford, Ward, Tippecanoe City, O.	Miami	63
Shaner, W. R., Cutler, O.	Washington	184
Shepard, W. S. & Co., R. R. No. 1, Perry, O.	Lake	41
Shields, J. H., Wapakoneta, O.	Auglaize	18
Siebenthaler, John, R. R. No. 1, Dayton, O.	Montgomery	245
Simmons Nursery Co., The, Casstown, O.	Miami	170
Smith, Henry, St. Paris, O.	Champaign	67
Smith, H. W., Kingman, O.	Clinton	297
Smith, Mark, New Carlisle, O.	Clark	87
Smith, R. H., Barnesville, O.	Belmont	315
Souders, W. S., East Carmel, O.	Columbiana	154
Stackhouse, B. F., Lisbon, O.	Columbiana	149
Stackhouse, Jesse & W. W. Hawkins, Kensington, O.	Carroll	175
Starbuck, Addison, Colerain, O.	Belmont	226
Steer, James, Tacoma, O.	Belmont	312
Stein, S. F. Zanesville, O.	Muskingum	128
Stephens, A. P., Perry, O.	Lake	39
Storrs & Harrison Co., The, Painesville, O.	Lake	53
Stout, H. E., Coolville, O.	Athens	288
Streater, George J., Garrettsville, O.	Portage	177
Stuckman, A. A., Bucyrus, O.	Crawford	192
Sutton, John H., Ryansville, O.	Lawrence	253
Swan, L. C., Garrettsville, O.	Portage	78
Swank, H. & Son, Mummaville, O.	Montgomery	274
Swick, W. C., Bremen, O.	Fairfield	302
Swisher, Eli, Kyger, O.	Gallia	255
Taggart, W. I., New Carlisle, O.	Clark	81

Name and Address of Owner.	County.	Cert. No.
Tatman, W. S., Hamersville, O.	Brown	306
Thompson & Secrest, Senecaville, O.	Guernsey	223
Tingley, Charles B., Mansfield, O.	Richland	93
Trainer, Mathew & Son, Lone Star, O.	Vinton	259
Trout, E. A., R. R. No. 2, Centerburg, O.	Licking	287
Turner, D. L., Dyesville, O.	Meigs	217
Turner, W. E., Dyesville, O.	Meigs	218
Uhrig, Leonard, Dayton, O.	Montgomery	190
Uhrig, Jr., Peter, New Carlisle, O.	Clark	80
Upland Nurseries, Bridgeport, O.	Belmont	225
Vandervort, J. M. & Son, Wilmington, O.	Clinton	117
Wagner, George, Barnesville, O.	Guernsey	311
Walker, S. F., Georgetown, O.	Brown	264
Walters, Emil, Nina, O.	Ottawa	6
Webster Mrs. S. R., R. R. No. 1, Rock Creek, Ohio	Ashtabula	295
Welch, Mark, Painesville, O.	Lake	64
Wellman, George, New Knoxville, O.	Auglaize	296
Weltz's, Leo Sons, Wilmington, O.	Clinton	118
West Bros., Perry O.	Lake	35
West, T. B., Perry, O.	Lake	34
Westfall, E. & Sons, Point Rock, O.	Vinton	216
Westfall, M. C., Dundas, O.	Vinton	258
Whitacre, T. L., East Rochester, O.	Columbiana	267
Whitney, C. L., Warren, O.	Trumbull	77
Wilcox, C. H., Barnesville, O.	Belmont	222
Williams, E. C., Zanesfield, O.	Logan	31
Willow Lake Nursery Co., Troy, O.	Miami	46
Wilson, Emmet, Dyesville, O.	Meigs	219
Winslow & McDonald, Tiverton, O.	Coshocton	162
Winters, G. W., Ryansville, O.	Lawrence	280
Wise, William M., R. R. No. 2, Springfield, O.	Clark	108
Wolf, Fred, R. R. No. 1, Dayton, O.	Montgomery	278
Wollam Nursery Co., Layland, O.	Coshocton	163
Wright Bros., Langsville, O.	Meigs	231
Wyss, Daniel, New Philadelphia, O.	Tuscarawas	186
Zettler Co., The, Canton, O.	Stark	113
Ziegenfelder, J. B., Troy, O.	Miami	169
Zincks, Christopher, Brandt, O.	Miami	97

Total—318.

Board
of
Live Stock
Commissioners.
Paul Fischer,
State Veterinarian.

W. W. Miller,
Secretary.

State Board of Agriculture
Organized 1846

J. W. Fleming,
Asst Secy.

STATE OF OHIO
DEPARTMENT OF AGRICULTURE
LIVE STOCK COMMISSIONERS.

Division
of
Nursery and Orchard
Inspection.
A. F. Burgess,
Chief Inspector.

ANNUAL REPORT

OF THE

STATE BOARD OF LIVE STOCK COMMISSIONERS OF OHIO.

To His Excellency, George K. Nash, Governor of Ohio:

SIR:—The State Board of Live Stock Commissioners has the honor to submit its second annual report, containing a general statement of its transactions in the discharge of its duties under the law, from November 3, 1902, to and including November 2, 1903, together with an appendix containing the laws relating to live stock and to the board of live stock commissioners, rules and regulations adopted by the present Board, and other matters of interest relating to the work of the Board.

Only one change in the membership of the board occured during the year, Mr. R. O. Hinsdale succeeding Mr. D. J. Green, whose term expired in January, 1903.

The first regular meeting of the Board was held January 13, 1903. With the exception of Mr. C. H. Ganson, who was compelled to be absent on account of sickness, all members of the Board were present, namely; Samuel Taylor, J. S. Stuckey, B. P. Baldwin, T. E. Cromley, T. L. Calvert, William Miller, J. L. Carpenter, A. P. Sandles and R. O. Hinsdale.

The Board, foreseeing conditions that actually arose, considered the appointment of a veterinarian who should devote all his time to the duties required by the office. At a subsequent meeting, held February 11, arrangements were made with Dr. Paul Fischer, Professor of Pathological Anatomy at the Ohio State University, to devote all his time to the duties of state veterinarian, beginning April 1, 1903.

In the course of the year convenient quarters for the veterinarian were secured, and a laboratory was equipped for carrying on the work of the Board. The bacteriological and other apparatus that has been provided, though necessarily limited in amount, is of the best and most modern that could be obtained and is sufficient to carry on all the more important investigations that the Board will probably be called upon, in the near future, to undertake. There is now no better equipped laboratory for the investigation of animal diseases in the state.

On the whole the year has been a busy one and the work has been pleasant. In a few cases opposition was offered to the enforcement of some of the regulations of the Board, but no more, perhaps, than might be expected where the public has not yet become familiar with the wholesome effects of thorough, and strictly enforced, sanitary police measures.

In the majority of instances the owners of diseased live stock heartily co-operated with the Board and showed their appreciation of the efforts made to stamp out disease.

The diseases that have appeared in Ohio during the past year and that have been investigated by the Board, and a few that otherwise received attention, may be classified as follows:

Among Horses:—Glanders and coital exanthema.

Among Cattle:—Tuberculosis, actinomycosis, infectious enteritis, infectious keratitis, rabies, Southern cattle fever, foot and mouth disease, and anthrax.

Among Sheep:—Scabies, nodular disease, and lung worms.

Among Swine:—Hog cholera and swine plague.

More detailed references in regard to investigations of these diseases will be found in another part of this report.

Notwithstanding newspaper, and other, reports of outbreaks of foot and mouth disease, and even contagious pleuro-pneumonia, among cattle in this state, no dangerous exotic disease of live stock have occured during the past year. The occurrence of coital axanthema in a comparatively small number of stallions and breeding mares, in a restricted area, and the discovery of true anthrax in a small herd of cattle, within the borders of our state, are in themeslves not alarming, but they serve to make us realize the great value of laws which provide for the thorough control of dangerous infectious diseases among the live stock of the state. At the same time the value of proper sanitary police control is equally emphasized by the fact that not a single case of Texas or Southern cattle fever has occurred within this state for the last fourteen months, and this, notwithstanding the fact that we are almost surrounded, so to speak, by an area of permanent infection, and that tick-infested Southern cattle, the carriers of the disease-producing agent, are daily imported into the state for the purpose of slaughter.

On the other hand, the fact that coital exanthema was permitted to make its appearance at all, and the fact that glanders has been introduced into certain sections of the state as a result of unrestricted shipments of horses, mules and asses from the outside, points to the need of better laws than those existing at the present time, and under which the police regulations of the Board are made.

A paragraph from the last report might find a place here: "Some of the states bordering on Ohio have specific laws for the control of tuberculosis in dairy cattle. Ohio has no laws on this subject. Tuberculous cattle may be shipped into Ohio from neighboring states and mingled with the native herds that are still free from the disease. The frequent letters received by the Board and personal knowledge prove beyond a doubt that this is sometimes done. The harm that a single tuberculous herd, thus imported, may do, cannot be stated. On the other hand, some states protect themselves against such importations by most rigidly enforced laws that require a tuberculin test to be made by a duly authorized veterinarian, that shows each and every animal to be free from tuberculosis before it can be delivered in those states." Ohio should have as ample protection not only for its cattle and dairy interests, but for horses, sheep and swine as well.

In the past year thirty-three horses affected with glanders were destroyed by order of the Board. The total value of these animals, according to appraisements made, as prescribed by the law of the state, was three thousand and twenty dollars ($3,020.00), itemized as follows:

Number and Sex of Horse.		Name and Residence of Owner.	Appraised Value.
* 1.	Black mare	O. B. Monosmith, Lorain	$125 00
2.	Bay mare	Cleveland Baking Co., Lorain	150 00
3.	White gelding	Sprague Brothers, Lorain	100 00
* 4.	White gelding	Sprague Brothers, Lorain	100 00
5.	Brown gelding	Sprague Brothers, Lorain	75 00
* 6.	Sorrel mare	N. C. Alten, Lorain	40 00
7.	Sorrel mare	W. S. Pole, Lorain	175 00
8.	Bay gelding	Beyer's Laundry, Lorain	90 00
9.	Bay gelding	T. M. Barnes, Lorain	60 00
10.	Brown mare	City Hardware Co., Lorain	80 00
*11.	Chestnut mare	City Hardware Co., Lorain	125 00
12.	Brown mare	S. S. Cox, Lorain	75 00
13.	Dun gelding	Sprague Brothers, Lorain	125 00
14.	Black mare	A. H. Babcock, Lorain	125 00
15.	Brown gelding	Sprague Brothers, Lorain	60 00
16.	Sorrel gelding	Sprague Brothers, Lorain	75 00
17.	Brown mare	Sprague Brothers, Lorain	60 00
18.	Brown gelding	Sprague Brothers, Lorain	60 00
19.	Brown mare	Sprague Brothers, Lorain	75 00
20.	Bay mare	Sprague Brothers, Lorain	80 00
21.	Bay gelding	Sprague Brothers, Lorain	125 00
22.	Black gelding	Sprague Brothers, Lorain	25 00
23.	Sorrel gelding	E. O. S. Brown, Lorain	75 00
24.	Brown mare	Chas. Garver, Lorain	100 00
25.	Black gelding	Modern Laundry Co., Lorain	150 00
*26.	Sorrel mare	Modern Laundry Co., Lorain	60 00
27.	Sorrel gelding	W. H. Basore, Lorain	40 00
28.	Brown mare	Cohn Brothers, Lorain	50 00
29.	Sorrel gelding	A. M. Webster, Lorain	75 00
30.	Sorrel gelding	E. O. S. Brown, Lorain	75 00
*31.	Brown-black gelding	Mrs. G. J. Braman, Lorain	150 00
32.	Black mare	Electric Package Co., Sandusky	175 00
33.	Gray mare	J. W. Trout, Feesburg	65 00
		Total	$3,020 00

Of the above list of horses, those marked with an * (asterisk) presented marked clinical symptoms of the disease. The remainder, though not free from some clinical indication of the disease in every case, were still capable of rendering some service (Section 4211-25, Revised Statutes of Ohio). This could be said in a comparative way, only, of the rest.

Glanders is the most dangerous and fatal disease of the horse and, at the same time, it occurs in all other domesticated animals, with the possible exception of the ox, and is not infrequently the cause of a horrible death in human beings.

For these reasons the control of this disease among horses, with a view to its ultimate extirpation, is a very important duty of the Board.

Although the direct cause of the disease is a specific germ, it is a marked fact that poor hygienic conditions are important factors in the development, as well as in the spread, of glanders. Such conditions are naturally found chiefly among such owners of horses as can ill afford to lose them, when the destruction of animals, in the incipient stage of the disease becomes necessary for the protection of the community in general.

The compulsory destruction of animals, in these cases, is a hardship on some people that may, in some cases, considerably affect the efficiency of the work of the Board where voluntary information from the public constitutes the basis of investigations that are made.

As required by law, and in view of the above explanations, the State Board of Live Stock Commissioners hereby reports for your favorable consideration, the claim of three thousand and twenty dollars ($3,020.00) against the State of Ohio, as compensation for horses affected with glanders and destroyed by order of the Board; this being the appraised value of thirty-three horses as itemized above.

While writing this report, an investigation of an outbreak of glanders is being conducted in the vicinity of Feesburg and other points in Brown county. From present indications it is safe to assume that a number of affected animals will be found; in fact, the horse that belonged to J. W. Trout, and which is included in the above list, is one of a group of suspected animals that were exposed to three horses affected with acute glanders, and which were destroyed by their owners when advised to do so, by a local veterinarian. These facts make it seem desirable that the Board have at its disposal a limited fund for the purpose of paying to the unfortunate owners of horses afflicted with glanders, at least a partial compensation for their loss. This would, in many ways, facilitate the work of the Board and thus increase its usefulness.

It is respectfully recommended that the sum of three thousand dollars ($3,000.00) be appropriated for this purpose, by the legislature.

The horses affected with acute glanders, and destroyed as above explained, were afterward caused to be appraised by the Board, as follows:

One sorrel stallion, owned by Maria Owens, Feesburg	$60 00
One gray gelding, owned by John R. Mathews, Feesburg......	30 00
One sorrel gelding, owned by John Bare, Feesburg............	30 00
Total	$120 00

It is respectfully recommended that the owners of these animals receive proper compensation for their losses, through appropriation by the legislature.

On the following pages will be found general outlines of the work accomplished by the Board toward the control and extirpation of the various dangerous contagious and infectious diseases of animals. For the sake of convenience in referring to these diseases, they have been arranged alphabetically, irrespective of their importance or of their occurrence in different species of animals.

ANTHRAX

IN HORSES AND CATTLE.

During the past year the appearance of true anthrax has for the first time been observed in this state. This is true at least in a far as any accessible records are concerned. Anthrax is one of the most dangerous of all known diseases. It affects all domesticated, and most wild, animals, as well as human beings, and generally terminates fatally. These facts alone emphasize the importance of a careful control of this disease.

It seems that Ohio has been peculiarly fortunate in thus far having been free from anthrax. However, this is probably true in a restricted sense only. Anthrax is found in all parts of the world, and very few countries are free from it. Nothing definite can be said of its distribution in the United States, but the following, quoted from the report of the Bureau of Animal Industry of the United States Department of Agriculture (1901), will be of interest: "Arkansas, Louisiana, Mississippi, and Texas have lost millions of dollars worth of horses, mules, cattle and other animals, and an undetermined number of human beings from this disease (anthrax). Other states, among them Pennsylvania, New York, Illinois, Wisconsin, and the Dakotas, have suffered to a greater or less extent, etc."

The following is from the same report: "There are certain regions where the disease appears to be indigenous, as on the alluvial soils of portions of the southern part of the Mississippi Valley, where it apparently develops when the conditions of the soil and climate are favorable. There are, however, other outbreaks which occur as a result of importing the contagion with hides, hair, wool, etc."

The origin of the disease in Ohio has not yet been determined, and possibly never will be. It is probable, however, that there exist in this state certain areas of infection, especially in the less improved (undrained) portions of the country, and that the disease may crop out again and again in restricted areas. The duty of the state, here, would be to make careful observations, with a view to locating these dangerous areas and then guarding them carefully. In 1902 a herd of cattle, that had been exposed to this disease in Kentucky, was held and quarantined in Columbus, but none of the animals developed the disease. They were finally slaughtered.

The outbreak of anthrax in 1903 occurred on the farm of John Henry, near Hudson, Ohio. On August 12th, Mr. Henry called on Dr. Fischer, who was at that time continuing the investigation of glanders among the horses of Lorain. Mr. Henry reported the loss of one horse and six cattle (five steers and one cow), from a disease that was suspected to be anthrax.

The statement of the owner, however, that his cattle had been in a cornfield on the night before the death of the first steer, and had helped themselves liberally to green corn, made it appear possible that the latter might have been the cause of the deaths. For this reason Mr. Henry was advised to procure the services of Dr. C. B. Frederick, of Canton, to make a preliminary examination and report results.

On the 13th (the next day) Dr. Frederick went to Hudson and visited Mr. Henry's farm. He reported three steers sick with symptons that resembled those of acute anthrax. He removed some blood from the jugular vein of one of these animals and submitted it to Dr. George F. Zinninger, a physician of Canton, for microscopic examination. Dr. Zinninger reported that coverglass preparations from the blood thus obtained and that cultures made from the same blood showed the presence of anthrax bacilli. One of the cultures prepared by Dr. Zinninger was turned over to the veterinarian of the Board, and with this a Belgian hare was inoculated. Death resulted from anthrax on the third day. A microscopic examination of the blood of this hare and the cultures of anthrax bacilli that were obtained from its blood clinched the diagnosis.

As soon as the diagnosis "anthrax" had been made, the necessary steps for controlling the disease were taken. The owner was instructed to remove the remaining animals from the pasture in which the disease appeared and to isolate them in a safe place. This was done, but not before two more steers became affected with the disease. None of these died, however. It was proposed to protect the remainder of the herd by inoculating the animals with a weakened culture of the anthrax bacillus, according to the method first employed by Toussaint and later improved by Pasteur. On account of the difficulty experienced in obtaining this material, some time elapsed before the inoculations could be performed, and no more deaths having occured in the herd in the meantime, the owner preferred not to have anything further done, and the matter was allowed to rest for the time being. It is now proposed to observe this and adjoining farms carefully and at the first indication of further outbreaks, resort to effective repressive measures immediately.

ACTINOMYCOSIS (*Big Jaw*)

IN CATTLE.

This disease occurs to a limited extent in various parts of the state. The fact that an effective remedy has been found to treat this disease, in its early stages, makes it of less importance, from a "sanitary police" point of view, than formerly. Actinomycosis occurs in human beings, but the danger of direct infection from affected animals, if it occurs at all, must be very slight.

Animals affected with this disease should be put under the care of a veterinarian. As far as the use of the meat from affected animals, with local forms of the disease, is concerned, although it cannot be said that any danger attends its use as food, the practice is rather disgusting and should not be encouraged.

When the disease is limited in extent and strictly local, the carcasses of affected animals are considered fit for human food, provided no emaciation exists and provided that the affected parts (the entire head when the jaw is the seat of the disease) be removed under the direction of a competent meat inspector.

Requests from local boards of health are sometimes received to examine animals that are reported to be affected with actinomycosis. Whenever possible, these requests are complied with, but in most cases the parties making the requests are advised to obtain the services of local veterinarians, the time of the veterinarian of this Board being fully occupied with matters pertaining to the more dangerous infectious and contagious diseases.

COITAL EXANTHEMA (*Venereal Disease*)

IN HORSES.

Coital exanthema was discovered among the breeding horses of Defiance and Paulding counties last May. Four stallions and about fifty breeding mares, that had been served by the former, were affected. The disease had spread over a considerable portion of the two counties named, as well as through an adjoining county in Indiana, before the Board became aware of the existence of the malady. By quarantining the affected stallions, as well as four others that had been exposed to infection, and by prohibiting the further breeding of the affected mares, the disease was checked before more damage was done. A careful investigation of the origin of the disease showed, beyond a doubt, that it was imported with the stallions. A number of imported stallions, besides those included in the above list, had been discovered which showed indications of having been affected with this disease at some previous time, although they had made perfect recoveries at the time they were observed by the veterinarian of the board.

Although serious consequences may result from attacks of this disease, such as sterility and barrenness, and in some cases even death, it is interesting and important from another point of view. In the first place, it is an exotic disease that had been imported into this state from a foreign country weeks, and possibly months, before it was discovered here.

The same thing could have occurred with a more serious disease, and the damage done would have been incomparably greater. Our laws should be so modified that future inportations of similar diseases can be prevented. No breeding animal of any kind imported from a foreign country should be allowed to be turned loose in this state before being properly inspected by a duly appointed inspector. This precaution is taken by other states and by other countries, and there is no state that has more reason to guard the health of its domestic animals than Ohio. There are a great many diseases, common in some other countries, that have not yet obtained a foothold here, but which may appear at any time. (The appearance of foot and mouth disease in the New England states is an example that should not fail to teach a valuable lesson.) The State Board of Live Stock Commissioners should be given power and means to guard against these possibilities.

An additional reason why the appearance of coital exanthema in this state is of peculiar interest is the fact that another disease, similar in its first symptoms, but far more dangerous, and which may easily be mistaken for the disease under discussion, has appeared among the breeding horses of some of our Western states, and has in fact been reported in one state bordering on Ohio. The disease referred to is maladie du coit (French), also called equine syphilis, although it has nothing in common, etiologically at least, with human syphilis. It is a disease, however, that should be equally dreaded. Nothing but strict sanitary police regulations and laws under which they can be made, will prevent the ultimate introduction of these diseases into Ohio. The expense necessary to enforce such regulations need not necessarily be excessive.

GLANDERS

IN HORSES.

Investigations of reported outbreaks of glanders (or farcy) in horses and mules have occupied more of the time and attention of the Board than any other disease. During the past year eighty-one horses and mules have been examined and tested with mallein, as compared with one case in the previous year. The explanation of this difference for the two years lies in the fact that the work of the Board has become better organized.

The disease was distributed as follows:

Place.	Kind of Animal.	No. Examined.	No. Affected.
Continental	Horses	1	1
Lorain	Horses	72	31
	Mules	1	0
Sandusky	Horses	2	1
Feesburg	Horses	5	2
Feesburg	Horses destroyed voluntarily by owners.....	....	3
East Trumbull	Horses destroyed voluntarily by owners.....	....	1
Pickerellton	Horses destroyed voluntarily by owners.....	....	1
	Total	81	40

Appraised value of thirty-three horses, affected with glanders, destroyed by order of the Boad $3,020 00
Appraised value of three horses destroyed voluntarily by the owners, $120.00.

In outbreaks of glanders that are investigated by the Board, all animals found to be infected are ordered destroyed and their carcasses burned or buried (as circumstances may require) at once. Where it is deemed necessary, all exposed animals are subjected to the mallein test. All animals that give a distinct and typical reaction to this test are regarded as affected with the disease, whether they show clinical symptoms of glanders or otherwise.

Where circumstances permit, careful autopsies are held on all animals that react to the test, but that show no clinical symptoms of the disease.

Every autopsy thus far conducted in such cases revealed unequivocal evidence of the presence of the disease. The results thus harmonize with those obtained by the Bureau of Animal Industry of the United States Department of Agriculture, in testing the horses and mules of the War Department which are stationed at St. Asaph, Va. Where the diagnosis was doubtful, Guinea pigs were inoculated with the nasal secretions or other suitable material. In this work the bacteriological laboratory, recently equipped by the Board, proved itself of great value.

The mallein used by the Board in making these tests was kindly furnished by the Bureau of Animal Industry of the United States Department of Agriculture.

HOG CHOLERA AND SWINE PLAGUE.

These two diseases, affecting animals that are the basis of an industry representing millions of dollars, are not receiving, and cannot receive, the attention that they should be given by the State Board of Live Stock

Commissioners until provisions are made for carrying on the work in an effective manner. The control of the ravages of hog cholera and swine plague require large funds, and with these intelligent and willing co-operation on the part of the owners of swine. At the present time there is manifested a tendency, on the part of many individuals, to suppress information regarding the appearance of these diseases in their herds, rather than to aid the Board in locating outbreaks.

The explanation of this is apparently the fear entertained by the owners of affected animals that any measures that are enforced with a view to controlling the diseases will necessarily result in a pecuniary loss to them. While this is true in a certain sense, in a few cases, it is certainly not so when a broader view of the subject is taken.

After either of these diseases has affected an animal, that animal in all probability will be a total loss to the owner. In most cases the diseases are incurable, and the meat of a diseased animal ought not to be considered as fit for human food, or in fact to have any commercial value.

The Board is endeavoring to aid the swine breeders and feeders of the state in controlling these diseases by inviting the owners of infected herds to report outbreaks as soon as they occur and receiving in return advice and assistance, where the latter can be given, that will lead to the saving of at least a part of their herds, and that will tend to check the progress of the diseases into those of their neighbors.

A bulletin on the prevention of hog cholera and swine plague was issued by the Board about a year ago; this is sent to all persons applying for the same or who request information which it contains.

INFECTIOUS ENTERITIS.

IN CATTLE.

A few cases of infectious enteritis in calves and grown cattle were found in Danville. This is a sporadic disease which is found in certain localities and stables, where it usually does more or less damage.

The disease terminates either in death or in a condition of emaciation that remains more or less chronic. Termination in the complete restoration of health is less common. Careful feeding and improvement of the sanitary condition of the yards and stables is the best preventive. When the disease has once made its appearance, thorough disinfection is necessary to get rid of it. Fortunately this disease does not seem to be very prevalent in Ohio.

INFECTIOUS KERATITIS

IN CATTLE.

During the warm season, especially in the latter part of the summer, this infectious eye disease is frequently reported. The disease affects the eyes of cattle and usually remains strictly localized. The course of the disease is short and usually terminates in perfect recovery within a few weeks. In a small per cent. of cases there may be permanent impairment of sight, or even complete loss of one or both eyes.

On the whole the disease is not considered a dangerous one, the loss occurring from it, as a rule, being confined to slight and temporary loss of flesh by the afflicted animal.

Owners reporting the existence of the disease in their herds are advised to isolate the affected animals, and to treat their eyes with an antiseptic wash. No further regulations for the control of this disease are advised by the Board.

NODULAR DISEASE

IN SHEEP.

Nodular disease, in sheep, is a very destructive malady. It is caused by an intestinal parasitic worm (Oesophagostoma Columbianum), which causes the appearance of various sized nodules in the walls of the large and small intestines of affected animals. Young pregnant ewes seem to suffer more than other sheep. The disease occurs only in a few localities in this state. In the past year, one outbreak was observed near Lockburn, about twelve miles south of Columbus.

The disease frequently terminates in death, and in other cases it permanently affects the general health of the animal. Once introduced on a farm, it is a difficult matter to exterminate it. Its treatment is very unsatisfactory. One reason for this is that the life history of the parasite, which is the cause of the disease, is not thoroughly understood.

The best preventive is the observation of care in the purchase of new stock. Farms free from the disease should not be stocked with sheep from infected areas.

RABIES (*Hydrophobia*)

IN CATTLE.

Rabies occurs in all of our domestic animals. During the past few years numerous outbreaks have occured in Ohio. Most of the cases that have come to the notice of the Board have occurred in dogs. In all of these cases the affected animals had been destroyed before the report was received, making it unnecessary for the Board to take any further action, aside from measures directed toward the protection of the still healthy animals.

An outbreak of the disease in Plattsburg was reported June 22, 1903. A calf, owned by Mrs. Dora Troxell, had been bitten by a mad dog on June 20th. This dog was destroyed on the same day, in South Charleston. July 14th, three additional cases of rabies in dogs were reported from the same place. These were results of the bites inflicted by the first dog referred to. The calf was quarantined for a few weeks and was then destroyed by the owner.

Another outbreak, in cattle, near Mansfield, was investigated July 15th. A number of cows and steers, that had been bitten by a mad dog, became affected with the disease and were destroyed. The dog had been killed before the outbreak was reported. A few cattle, that had been kept in the pasture with the affected animals, were isolated and quarantined. No further deaths occurred.

A law requiring the muzzling of all dogs at certain seasons of the year, especially in cities and in towns of any size, would do infinitely more toward controlling this disease than any measures that can at present be enforced by the Board of Live Stock Commissioners.

SCABIES (*Scab*)

IN SHEEP.

The control of scab in sheep is a very important part of the work of the Board. Although the native sheep of Ohio are free from this disease, it is frequently observed in sheep that have been shipped from the West for feeders. Co-operation of the inspectors of the Bureau of Animal Industry of the United States Department of Agriculture, that are stationed in Ohio, has made it possible for the Board to locate a great many outbreaks.

The counties from which the disease was reported in 1903 are given in the table below. The number of affected sheep found in each county upon investigation, and ordered dipped by the Board, and the number that were found to have been shipped from the county to the various abattoirs at which the inspectors are stationed, are given in separate columns. Where it was possible to locate the source of the infection this also is indicated.

NUMBER OF INFECTED SHEEP THAT WERE LOCATED.

County.	Quarantined and Dipped.	Shipped out before Board investigated.	Source of Sheep.	Total.
Highland	60	417	Wyoming	477
Wayne	35	61	Wyoming	96
Jackson	0	63	Kentucky	63
Van Wert	50	249	Chicago	299
Medina	200	211	Chicago	411
Ross	5	243	Chicago	248
Belmont	0	0		0
Crawford	105	26	Chicago	131

Total number of scabby sheep found in Ohio, in 1903 1,725

Scab was thus reported from nine counties, but investigation showed that it actually existed in only seven. It should be noted that in each case it was possible to trace the origin of the disease to some point outside of the state. The regulations that were issued for the control of this disease will be found in the appendix.

TUBERCULOSIS

IN CATTLE.

The work of the Board with this disease has been along the same lines that were followed in 1902. Whenever requests were received, dairy herds were tested with tuberculin and the owners were instructed as to the best methods of keeping their herds free from disease in the future.

Although requests of this kind were rather numerous, only a comparatively few herds were actually visited and examined. The reason for this was that in most cases the owners were unwilling to comply with the conditions demanded by the Board, viz., the destruction of all affected animals.

The reluctance of some owners to sacrifice their cattle, rather than send them to market and realize some return for them, regardless of the injury to the unsuspecting buyer, will be an insurmountbale obstacle to the successful control of this disease, until provisions are made by the state to bear at least a part of the burden.

This is done by many other states, and in most of these, but notably in Pennsylvania, the results have been extremely gratifying. In the latter state the extent of tuberculosis is said to have been reduced fully one-half within the four years that the work of extermination has been in progress.

Judging from the results of the few investigations that have thus far been made by the Board, tuberculosis must be far less prevalent in Ohio than seems to be the case in some of our less fortunate Eastern states. The following, quoted from the report of the state veterinarian of Pennsylvania (Dr. Leonard Pearson), will be of interest in this connection:

"Without control, we have every reason to expect tuberculosis to become as common among the live stock in this country as it is in the old infected regions abroad, where in large districts from one-half to two-thirds of the cattle are infected and where in some countries, as in the Kingdom of Saxony, thirty per cent. of the cattle that are killed for food are found to contain alterations of this disease.

"We have the advantage of knowing both the enemy and the means to be employed in combating it, and if tuberculosis shall ever become more firmly rooted in Pennsylvania, it will be because the lessons of experience are unheeded and available protection ignored."

An appropriation of fifty thousand dollars ($50,000.00) for the use of the Board in beginning the work of wiping out this disease would be none two large. The benefits that would result would be appreciated by the people of Ohio, as well as those of other states, where the work of repressing this disease has been in progress for some years and where its fruits are now beginning to be reaped.

SOUTHERN CATTLE FEVER (*Texas Fever*).

Not a single case of Texas fever was reported in this state during the year 1903. The regulations of the Board require that all persons, companies, etc., shipping Southern cattle, or causing them to be shipped, into this state, shall first obtain a permit from the State Board of Live Stock Commissioners, which must show that the pens or yards and unloading chutes that are to be used for these cattle have been inspected by the state veterinarian and found to conform with the requirements of these regulations. Cattle coming from south of the National quarantine line for Southern cattle fever may be unloaded at such places for the purpose of immediate slaughter only. Shipments for any other purpose are prohibited. These regulations have proved effective in every sense of the word.

Requests for inspection of stock yards, unloading pens, chutes and abattoirs have been received and complied with as follows: Union Stock Yards, Cincinnati; Canton Provision Company, Canton; Frank Pressley, Mentor; F. C. Gerold, Saybrook; Max Zanville, Jacob Folger and Nicholas Rassel and Son, Toledo; The Cleveland Provision Company, The Lake Erie Provision Company, The Theuer Norton Provision Company, The Ohio Provision Company, The Long Dressed Beef Company, The Peck and Flick Dressed Beef Company, and the Cleveland Stock Yards Company, of Cleveland.

Fifty carloads of Southern cattle have been brought into the state under these regulations during the past year. This does not include a large number that were received at some of the abattoirs in Cincinnati and in Cleveland, where inspectors of the United States Bureau of Animal Industry are permanently stationed. Beginning with the next year, it is proposed to keep careful records of these also.

FINANCIAL REPORT OF THE STATE BOARD OF LIVE STOCK COMMISSIONERS FOR THE YEAR BEGINNING NOVEMBER 3, 1902, AND ENDING NOVEMBER 2, 1903.

To balance of appropriation by the General Assembly for the year ending February 15, 1903	$2,019 46	
To appropriation by the General Assembly for the year ending February 15, 1904	3,000 00	$5,019 46
By expenses of officers and members of the Board	$251 05	
By salaries	1,596 00	
By expenses of State Veterinarian	560 44	
By general expenses	1,066 71	
By balance of appropriation unexpended	1,545 26	
	$5,019 46	$5,019 46

THE STATE BOARD OF LIVE STOCK COMMISSIONERS,

By W. W. Miller,

Secretary.

Paul Fischer,

Veterinarian.

[APPENDIX A.]

LAWS RELATING TO LIVE STOCK AND THE BOARD OF LIVE STOCK COMMISSIONERS, ITS DUTIES, ETC.

Revised Statutes of Ohio.

SEC. 4210. [*What cattle infected with disease shall not be brought into state.* No person shall bring into the state of Ohio any cattle infected with the disease commonly known as the "Texas or Spanish fever," or pleuro-pneumonia, rinderpest, or other contagious diseases or any cattle liable to impart such fever or disease to other cattle; but this section shall not affect common carriers who are not the owners of cattle. Whoever violates the provisions of this section shall be liable to any person injured by bringing such cattle into the state in the amount of any loss occasioned thereby, in addition to other penalties provided by law.

(For importing cattle infected with Spanish fever see Sec. 7003.)

SEC. 4211. [*Presumptions in actions to recover damages for infection.*] Whenever any Texas or Cherokee cattle, liable to impart disease, are brought into the state, and any such disease as Texas or Spanish fever makes its appearance within sixty days, and infects other cattle that have been on the same highway, common or pasture ground traveled over by such Texas or Cherokee cattle with such disease, such fact shall be deemed and taken in action to recover damages as prima facie evidence that such Texas or Cherokee cattle were infected with the disease known as the "Texas or Spanish fever," and that they imparted such disease; and the owner of such Texas or Cherokee cattle at the time they were brought into the state, and the owner of such cattle at the time the disease makes its appearance, shall be jointly and severally liable for any damages resulting from such disease.

SEC. 4211-6. [*Transportation of cholera-infected hogs.*] From and after the passage of this act, it shall be unlawful for any person or persons owning or having charge of any hog or hogs infected with cholera to transport the same within the borders of this state.

SEC. 4211-7. [*Liability of violator.*] Any person or persons violating the provisions of this act shall be liable for all damages resulting from the introduction of such disease thereby, to be recovered by any person so damaged, and shall also be deemed guilty of a misdemeanor and on conviction thereof shall be fined in any sum not exceeding five hundred dollars or be imprisoned in the jail of the county not exceeding six months, or both.

SEC. 4211-8. [*Common carriers or employes not affected, etc.*] This act shall not be construed so as to affect common carriers or their employes, and shall take effect and be in force from and after its passage.

SEC. 4211-9. [*Board of Live Stock Commissioners.*] The Ohio Live Board of Agriculture shall be and is hereby constituted the Board of Live Stock Commissioners for the promotion and protection of the live stock interests of the state and the prevention of the spread of infectious and contagious and infectious diseases among domestic animals and the extermination of the same; and to co-operate with the Bureau of Animal Industry of the United States Department of Agriculture, in the suppression and extirpation of contagious and infectious diseases among domestic animals. The Board may elect such officers as it may deem necessary, and shall have powers in its organization and work to prescribe such rules and establish such regulations, not in conflict with law, as it may deem necessary, to secure strict quarantine and otherwise prevent the spread of infectious and contagious diseases among live stock and extirpate the same so far as it may be able to do so.

SEC. 4211-10. [*Duty as to extirpating diseases.*] The Board of Commissioners are authorized to use all proper means to prevent the spread of dangerous and fatal diseases among domestic animals, and to provide for the extirpation of such diseases; and in the event of any such contagious or infectious disease breaking out in this state, it shall be the duty of all persons owning or having in charge animals infected with the same, to immediately notify said Board of Commissioners, or some member thereof, of the existence of such disease, and thereupon it shall be the duty of said board immediately to cause proper examination thereof to be made by a competent veterinarian; and if said disease shall be found to be a dangerously contagious or infectious malady, the board shall order the diseased animals, and such as have been exposed to the contagion, to be strictly quarantined in charge of such person as the board, or an authorized member thereof, shall designate, and to order any premises or farms where such disease exists, or has recently existed, to be put in quarantine so that no domestic animal subject to such disease be removed from or brought to, the premises or places so quarantined; and the board shall prescribe such regulations as they may deem necessary to prevent the contagion from being communicated in any way from the premises so quarantined.

SEC. 4211-11. [*Bodies of dead animals.*] The bodies of all dead animals shall be buried or burned by the owners thereof, as provided by law. See Sec. 6923*a*.

SEC. 4211-12. [*An act to suppress dangerously contagious diseases of animals; expenses of quarantining such animals; duty of sheriffs and constables.*] That any person having in his possession or under his care, any animal which he knows, or has reason to believe, is affected with a dangerously contagious or infectious disease, and does not, without unnecessary delay, make known the same to said Board, or to some member thereof, or to the sheriff or constable of the proper county, to be by him communicated to said Board; or any person or corporation who shall bring into this state, or sell or dispose of any animal, knowing the same to be affected as aforesaid, or any animal having been exposed to such contagion, within three months of such exposure, or shall move the animal so diseased or exposed from the quarantine to which it was ordered by the Board of Commissioners, or shall move any animal to or from any district in this state declared to be infected with such contagious disease, or shall bring into this state any animal of the kind diseased from any district outside of the state that may at any time be legally declared to be affected with such disease without the consent of said board, except under such conditions as are or may be prescribed by said board, shall, upon conviction of either of the aforesaid offenses, be fined in any sum not exceeding five hundred dollars. And all proper expense incurred in the quarantining of animals under the provisions of this act, shall be paid by the owners thereof, and if the same is refused, after demand made by the order of the commissioners, an action may be brought to recover the same with costs of suit, which action may be in the name of the state of Ohio, for the use of the board of live stock commissioners. It shall be the duty of all sheriffs and constables to execute within their several counties all lawful orders of the said commissioners.

SEC. 4211-13. [*Records of board; report; printing expenses; compensation, etc.*] The Board of Live Stock Commissioners shall keep a record of its acts and investigations of diseases of live stock and report the same to the governor on the first Monday of November, annually, and shall publish and distribute such bulletins and reports as may be deemed of general interest and information. The supervisor of public printing shall provide for such printing as the board may deem necessary and desirable to benefit the live stock interests of the state, under the same provisions as are made for other state printing. Each member of said board shall receive for his services the sum of *three* dollars per day and necessary traveling expenses for each day he is actually engaged in the investigation and eradication of diseases of domestic animals by the direction of the Board.

SEC. 4211-15. [*Proclamation prohibiting importation of diseased live stock.*] Whenever the governor of the state of Ohio, upon receipt of information from the State Board of Live Stock Commissioners shall * * * believe that any dangerous, contagious or infectious disease has become epidemic in certain localities in other states, territories or counties, or that there are conditions which render domestic animals of such infected district liable to convey such disease, he shall, by proclamation, prohibit the importation of any live stock of the kind diseased into the state, except under such regulations as may be prescribed by the State Board of Live Stock Commissioners and approved by the governor.

SEC. 4211-16. [*Appraisement and killing of diseased animals.*] When in the opinion of the commissioners it shall be necessary to prevent the further spread of any dangerous, contagious or infectious disease among the live stock of the state, to destroy animals affected with or which have been exposed to any such disease, it shall determine what animals shall be killed, and shall appraise or cause the same to be appraised, by disinterested citizens, as hereinafter provided, and cause such animals to be killed, and their carcasses to be disposed of as in the judgment of the commission will best protect the health of the domestic animals of the locality; provided, that no animal shall * * * be slaughtered under the provisions of this act unless first examined by a competent veterinarian in the employ of the commission, and the disease with which it is affected or to which it has been exposed adjudged to be a dangerous and contagious malady.

SEC. 4211-16a. [*Appointment of veterinarian; compensation; additional veterinarians, etc.*] The Board of Live Stock Commissioners shall appoint a competent veterinarian whose compensation shall be fixed by the Board; such veterinarian to perform all duties prescribed by the Board and be subject to such rules and regulations as it may adopt. In case of an outbreak of animal disease, the Board may, if it is deemed advisable, appoint temporarily, additional veterinarians or other persons for any special work in furtherance of the live stock interests of the state, and fix their compensation.

SEC. 4211-16b. [*Officers, agents or employes shall have authority to enter upon public or private premises, car, boat, etc.*] In the enforcement of any provisions of this act or any other laws relating to the Board of Live Stock Commissioners, and in the enforcement of the rules and regulations that may be adopted under the authority of section one (4211-9) of this act, the Board of Live Stock Commissioners, or any of them or their authorized officers, agents or employes, shall have authority to enter upon any public or private premises, or within any building wherein live stock is housed, or to enter any railway car or any boat or other conveyance used in the transportation of live stock, for the purpose of inspection and for the protection of the live stock of the State.

SEC. 4211-16c. [*Penalty and fine for failure to comply with the rules of the Board of Live Stock Commissioners.*] The failure of any individual, company or corporation to comply with the rules of the Board of Live Stock Commissioners, or to respect its regulations with regard to diseased animals, when notified so to do, shall subject the offender to a penalty of not less than fifty ($50) dollars nor more than five hundred ($500) dollars, tc be recovered by civil action in the county where the offense is committed or in the county of Franklin, and in addition to the penalty above provided, a person violating any of the provisions of this act, shall be deemed guilty of a misdemeanor, and on conviction shall be fined not less than fifty ($50) dollars nor more than two hundred ($200) dollars; such fines and penalties to be collected in the name of the state of Ohio, for the use of the Board of Live Stock Commissioners.

SEC. 4211-16d. [*Co-operation with the United States in the enforcement of law.*] The Board of Live Stock Commissioners is authorized to accept on behalf of the state the rules and regulations prepared by the commissioner of agriculture under and in pursuance of section three, of an act of Congress, approved May 29, 1888, entitled "An act for the establishment of a bureau of animal industry, to prevent the exportation of diseased cattle and to provide means for the suppression and extirpation of pleuro-pneumonia and other contagious diseases among domestic animals," and to co-operate with the authorities of the United States in the enforcement of the provisions of such act.

SEC. 4211-16e. [*The Bureau of Animal Industry of the United States to have right of inspection, quarantine and condemnation of animals; power to call upon constables, peace officers, etc.*] The inspector of the Bureau of Animal Industry of the United States shall have the right of inspection, quarantine and condemnation of animals affected with any contagious, infectious or communicable disease, or suspected of being so affected, or that have been exposed to any such disease; and for these purposes are authorized and empowered to enter upon any ground or premises in the state. They shall have power to call upon any constables and peace officers to assist them in the discharge of their duties in carrying out the provisions of said act of Congress; and it is made the duty of said officers to assist them when so requested. The inspectors shall hvae the same powers and protection as peace officers while engaged in the discharge of their duties.

SEC. 4211-17. [*Compensation for animals destroyed.*] In case of destruction of any animal under the provisions of this act, the compensation to be made for the same by the state shall be computed upon the basis of the actual value of the diseased animal, if any, at the time of slaughter; for any animal that has been kept in the same building or enclosure two-thirds of such value, and in case of other animals destroyed for the extinction of such disease, the full value of the same without reference to the suspicion of contagion; provided, that no compensation shall be made to any person who may have brought animals into the state affected with such contagious disease, or from a district in which such contagious disease existed, or who may have wilfully concealed the existence of such disease among his stock or on his premises, or may have by wilful neglect or purposely contributed to the spread of such contagion; and in appraising animals to be slaughtered as herein provided, no allowance shall be made on account of such animals being thoroughbred, or pedigree stock.

SEC. 4211-18. [*Appropriation to pay claims; how made.*] All claims against the state by owners of animals slaughtered under the provisions of this act, shall, when approved by the Board of Live Stock Commissioners; be reported by said commission to the governor, to be by him communicated to the legislature with the recommendation, if the matter is approved by him, that the proper appropriation be made to pay such claims.

WHEREAS, All cattle wintered in the states of Florida, South Carolina, North Carolina, Georgia, Alabama, Mississippi, Louisiana, Tennessee, Arkansas, Texas and the Indian Territory are infected with a germ which renders them capable, except during the frost of winter, of infecting Northern cattle with a malady commonly known as "Texas fever," while they show no manifestation of disease; therefore,

SEC. 4211-19. [*The driving of cattle from certain states forbidden during certain months; conveyance by railway forbidden, except.*] During the months of March, April, May, June, July, August, September and October no cattle shall be permitted to be driven into this state from any of the above mentioned states or Indian Territory, or that shall have been wintered therein, nor shall any person or company bring, or cause to be conveyed into this state by railway or otherwise, any such cattle under said conditions, except as specified in the next section of this act.

SEC. 4211-20. [*Unloading of certain cattle in certain months forbidden, except.*] Any railroad or other transportation company conveying into or through this state, or any stock-yard company receiving such cattle during the months aforesaid, will not be permitted to unload the same in this state for any other purpose than to be fed and watered or for immediate slaughter, and in yards and premises especially provided for that purpose, into which Northern cattle will not be permitted to enter. And the location and arrangement of the said yards or premises and the disinfection of the cars and quarters used in the transportation of such cattle shall be governed by the rules and regulations prescribed by the Board of Live Stock Commissioners.

SEC. 4211-21. [*Penalty.*] Any person or corporation that shall bring or cause to be brought or driven into this state, any cattle wintered in the states or territory above mentioned, or to be driven or conveyed otherwise than as herein specified, shall, upon conviction thereof, be fined in any sum not less than one hundred dollars, nor more than one thousand dollars, and shall, moreover, be liable for all damages that may be occasioned on account of other cattle being infected with said disease.

SEC. 4211-22. [*Duty of transportation companies; penalty for violation of such duty.*] It shall be the duty of all railway and other transportation companies bringing into and unloading in this state cattle otherwise than as specified in section *two* (4211-20)of this act, during the months above specified, to require a statement to be made in their shipping bills, showing in what state or territory the cattle shipped were wintered; and it shall be the duty of every railroad company bringing into this state cattle, which may unload such cattle for any other purpose than to be fed and watered as specified in section two (4211-20) of this act, to leave at the office of such company nearest the point where such cattle may be unloaded, a copy for public inspection of the statement above required, showing where the same were wintered; and any company or corporation neglecting to comply with the provisions of this section, shall, upon conviction thereof, be fined in any sum not exceeding five hundred dollars.

SEC. 4211-23. [*Prosecution for offenses hereunder.*] Upon the request of the Board of Live Stock Commissioners it shall be the duty of the prosecuting attorney of any county in which the suit may be brought to begin and prosecute any action for the violation of the provisions of this act and the rules and regulations of the Board of Live Stock Commissioners. Proceedings against any railway company under this act may be had in any county in this state through which any portion of such company's road may pass, or in which its principal office may be situated; and process may be served by leaving a copy at the office of such company within such county.

SEC. 4211-24. [*Penalty for selling or failing to keep securely isolated horses, etc., affected with glanders.*] Any person owning or having in his charge any horse, mule or ass that he knows or has reason to believe is affected with the disease known as glanders or farcy, or that has been adjudged to be so affected by the State Board of Live Stock Commissioners upon a report made to said Board by a competent veterinary surgeon, in their employ, after a careful examination of such animal, who shall sell or otherwise dispose of, or secrete the same, or shall fail to keep such animal securely isolated so that contact with other horses, mules or asses shall not be possible, shall, upon conviction of either of said offenses, be fined in any sum not exceeding five hundred dollars, and shall, moreover, be liable for all damages sustained by reason of same.

SEC. 4211-25. [*Appraisal and payment of compensation in case of destruction of such animals by order of live stock commission.*] In case the Live Stock Commissioners shall order the destruction of any animal affected with glanders or farcy in the chronic stage of the disease, which may be adjudged capable of rendering some service, the Board may cause the animal to be appraised, and order such compensation to be paid out on the order of the Live Stock Commissioners, on the warrants of the auditor of state out of any funds in the treasury to the credit of the Live Stock Commission, as in the judgment of the commissioners may be just, not exceeding its cash value; provided the horse was not diseased when passed in possesion of the owner.

SEC. 4211-26. [*Penalty for suffering sheep affected with scab to run at large or for selling same, knowing, etc.*] Any person owning or having in charge any sheep affected with foot-rot or scab who shall suffer the same to run upon any highway, common or other uninclosed ground, or shall sell such sheep, knowing or having reason to believe them to be diseased, without disclosing the fact to the purchaser, shall, upon conviction of either of said offenses, be fined in any sum not exceeding one hundred dollars, and be liable to parties injured for all damages sustained.

(See Sec. 6855 as to allowing diseased animals to run at large.)

SEC. 4212. [*Duties of carriers and owners of stockyards.* All railway companies and owners of steamboats used in conveying live stock and owners of stockyards and other premises that may be occupied by such stock, shall, immediately upon discovering any contagious disease among stock occupying such cars, boats, yards, or other premises, take all possible measures to prevent such diseased stock from communicating the contagion to other stock, and shall moreover cause all such cars, boats, yards, and premises to be thoroughly disinfected before the same shall be occupied by other stock. Every corporation and company, their officers and employes, or individuals violating the provisions of this section, shall pay a penalty not exceeding five hundred dollars, to be recovered in any court of competent jurisdiction, and shall also be liable to parties injured for all damages that may be occasioned thereby.

[APPENDIX B.]

GENERAL RULES OF THE BOARD OF LIVE STOCK COMMISSIONERS OF OHIO.

Rule 1. When supposed cases of dangerously contagious or infectious diseases of live stock are reported to the Board of Live Stock Commissioners, the Secretary of the Board shall, when, in his judgment it appears necessary, direct the State Veterinarian to make a thorough examination of the affected animal or animals; and if the State Veterinarian is of the opinion that any contagious or infectious disease exists, he shall, if deemed necessary, at once cause to be quarantined the diseased, as well as all exposed, animal or animals and premises or farms where such disease exists, and report his action to the Secretary of the Board.

Rule 2. No examinations or investiagtions shall be made in accordance with Rule 1 until the Secretary of the Board and the State Veterinarian are satisfied that the reports of outbreaks of disease are reasonably well founded.

Rule 3. The Board of Live Stock Commissioners, before ordering an investigation by the State Veterinarian, may require two or more reputable citizens of the county in which a reported case of dangerously infectious disease exists, to make a written statement confirming such report.

Rule 4. When the State Veterinarian shall order diseased animals, or such as have been exposed to a contagion, and any premises or farms where such disease exists, to be strictly quarantined, he may call upon the sheriffs or constables of the county or counties in which such quarantine is ordered, to execute said quarantine. All proper expense incurred in the quarantining of animals shall be paid by the owners thereof. Any quarantine ordered by the State Veterinarian shall remain in force until removed by his order.

Rule 5. In case the Board of Live Stock Commissioners shall order the destruction of any animal affected with glanders or farcy, in the chronic stage of the disease, which may be adjudged capable of rendering some service; or when, in the opinion of the State Veterinarian, it shall be necessary to prevent the spread of any contagion or infection among the live stock of the state, he may require diseased animals to be killed and their carcasses burned or buried, as he may direct; in either case, said animals shall be appraised by disinterested freeholders of the county in which such animals are owned, one to be selected by the owner of the animal or animals killed or destroyed, and another by the Board of Live Stock Commissioners; and these two, if they cannot reach an agreement, shall select a third person to act with them; these shall make the report of their findings to the Secretary of the Board of Live Stock Commissioners and he shall refer the same to the Board; and, if findings are approved, the Board shall report the same to the Governor of the state, to be by him communicated to the Legislature, with the recommendation, if the matter is approved by him, that the proper appropriation be made to pay such claims.

Rule 6. The State Veterinarian may prescribe and publish rules for disinfection of barns, sheds or premises where infectious diseases exist or have existed, and for the disinfection of harness, utensils, wagons, etc., kept on such premises.

Rule 7. Upon request of owners desiring to ship animals to other states or territories requiring certificates of health accompanying such animals, it shall be the duty of the State Veterinarian, or an inspector designated by him, to inspect said animals, and if, after inspection, the State Veterinarian is satisfied that the animals in question are free from observable symptoms of any dangerous, infectious or contagious disease for which the particular state or territory into which the animals are intended to be shipped requires inspection, he shall issue the required certificate.

Rule 8. All expenses of inspection provided for in Rule 7 shall be borne by the owner or shipper who makes request for inspection, and shall be at the rate of five dollars ($5) per day, or fraction thereof, and all necessary expenses of travel and subsistence.

Rule 9. Owners of abattoirs or other persons desiring to import Southern cattle for the purpose of immediate slaughter must apply to the Board of Live Stock Commissioners for a permit to unload such cattle within this state. Upon receipt of a request for such permit, the Secretary shall direct the State Veterinarian to inspect the pens and abattoir to be used for the purpose specified, and if these are found to conform with the requirements of the Board of Live Stock Commissioners for the unloading of Southern cattle, the Secretary and the State Veterinarian shall issue the permit.

[APPENDIX C.]

To Railroad, Steamboat, Transportation, Abattoir and Stock Yard Companies and Their Employes.

Your attention is hereby called to those laws of Ohio which relate to the bringing of certain cattle into this state, viz.: Sections 4211-19, 4211-20, 4211-21, 4211-22 and 4211-23, Revised Statutes. A copy of these laws is enclosed herewith.

The rules and regulations of the Board of Live Stock Commissioners regulating the unloading of *Southern* or *quarantine cattle* are given below:

1. The pens for receiving Southern or quarantine cattle for purposes of feeding, watering or immediate slaughter must be constructed of two strong board fences which must be at least five feet high and separated by a space of at least *twelve feet* and into which space or passage no cattle or stock of any kind shall be permitted to enter.

2. The pens used for receiving Southern or quarantine cattle for the purposes above mentioned shall not be used for receiving any other kinds of live stock.

3. Before any person, company, firm or corporation may legally handle Southern or quarantine cattle a permit must be obtained from the Board of Live Stock Commissioners; such permit to be furnished after the State Veterinarian has, at the request of the person, company, firm or corporation desiring such permit, completed an inspection of the pens intended to be used for the purposes mentioned, and found them safe places for handling such cattle.

The State Veterinarian shall also designate a suitable place at or near the point of unloading in which cattle cars used for transporting Southern or quarantine cattle shall be cleaned and disinfected before they are again used for the transportation of other live stock or merchandise of any kind, and before the quarantine placards placed on such cars are removed.

The following rules* for cleaning and disinfecting cattle cars used for transporting Southern or quarantine cattle have been adopted by this Board:

Remove all litter and manure and disinfect it by mixing it with lime or saturating it with a 5 per cent. solution of 100 per cent. carbolic acid, or, if not disinfected, it may be stored where no cattle can come in contact with it during the period from Feb. 1 to Nov. 15 of each year. Wash the cars and the feeding and watering troughs until clean. Saturate the entire interior surface of the cars and fencing, troughs and chutes of the pens with a mixture of 1½ pounds of lime and one-quarter pound of 100 per cent. straw colored carbolic acid to each gallon of water: or a solution made by dissolving four ounces of chloride of lime to each gallon of water may be used; or disinfect the cars with a jet of steam under a pressure of not less than 50 pounds to the square inch.

By order of the State Board of Live Stock Commissioners.

W. W. MILLER,
Secretary.
PAUL FISCHER,
Veterinarian.

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*These rules were issued in Order No. 93, Bureau of Animal Industry, U. S. Department of Agriculture, and have been adopted by the Board of Live Stock Commissioners of Ohio.

[APPENDIX D.]

PERMIT FOR RECEIVING SOUTHERN CATTLE FOR THE PURPOSE OF IMMEDIATE SLAUGHTER.

COLUMBUS, O..................190..

THIS IS TO CERTIFY, That the cattle pens and abattoir used by....................in......................., Ohio, for receiving Southern cattle for the purpose of immediate slaughter have been duly inspected by the State Veterinarian and have been found to conform with the requirements of the Board of Live Stock Commissioners for the unloading of Southern or quarantine cattle.

The owner..or manager..of this abattoir hereby agrees to use said pens for the purpose of receiving animals to be immediately slaughtered and for no other purpose. The owner..or manager..of this abattoir further agrees to clean and disinfect, according to the rules of the Board of Live Stock Commissioners, all cars in which..he.. receives Southern, or quarantine cattle, and to notify said Board within forty-eight hours of the time that such cleaning and disinfection was performed. Cars requiring disinfection must not be removed from the yards where cattle were unloaded until they have been cleaned and disinfected as above provided.

The rules for cleaning and disinfecting Southern cattle cars are given below:

> "Remove all litter and manure and disinfect it by mixing it with lime or saturating it with a 5 per cent. solution of 100 per cent. corbolic acid, if not disinfected it may be stored where no cattle can come in contact with it during the period from February 1 to November 15 of each year. Wash the cars and the feeding and watering troughs until clean. Saturate the entire interior surface of the cars and fencing, troughs and chutes of the pens with a mixture of 1½ pounds of lime and one-quarter pound of 100 per cent. straw colored carbolic acid to each gallon of water; or a solution made by dissolving four ounces of chloride of lime to each gallon of water may be used; or disinfect the cars with a jet of steam under a pressure of not less than 50 pounds to the square inch."

This permit is issued..................190.., and is to remain in force until January 1, 190.., or until it is withdrawn by the State Board of Live Stock Commissioners.

....

Owner or Manager of Abattoir. *Secretary B. of L. S. C.*

....

State Veterinarian.

[This permit is not valid unless signed by the owner or manager of the abattoir for which it is issued and by the Secretary and Veterinarian of the State Board of Live Stock Commissioners. Penalty for unloading Southern cattle without this permit is $100 to $1,000 and liability for all damages that may be occasioned on account of other cattle being infected with Southern cattle fever, See Sec. 4211-21, Revised Statutes.]

[APPENDIX E.]

THE PREVENTION OF SWINE PLAGUE AND HOG CHOLERA.

By DR. PAUL FISCHER, *State Veterinarian.*

Swine plague and hog cholera are the most commmon and destructive diseases of swine. The annual losses which they occasion are enormous. The fact that both diseases are at the present time practically incurable leaves us the only alternative of using every means in our power to prevent their introduction into healthy herds. Prevention is the best method of dealing with any communicable disease. For swine plague and hog cholera we know of no other method.

In this short article I shall confine my remarks as strictly as possible to this phase of the question.

The investigations of bacteriologists have shown that swine plague and hog cholera are two different and distinct diseases of swine. The clinical picture of these diseases, their mode of infection and manner of dissemination offer many points of similarity; both are very fatal, and as far as practical hints on their prevention are concerned, what applies to one of them applies equally well to the other. For this reason my remarks will be limited to swine plague, the reader bearing in mind that the facts and suggestions are equally applicable to both diseases.

Swine plague is a very fatal, infectious and contagious disease of swine. It is caused by a so-called "germ" known as the swine plague bacillus, an inconceivably minute vegetable parasite that grows in the animal tissues and by the poisons or toxines which it excretes it causes the symptoms observed in the course of the disease. An idea of the size of this "germ" may be obtained from the statement that fifty thousand of them placed side by side in a row would not make a line one inch long. This extreme minuteness is of the utmost importance when the question of prophylaxis, or prevention, is considered, as we shall see later.

In order to be able to intelligently provide means for the prevention of a disease we must know something of its cause, how infection takes place and how the infectious principle (germ) is spread from place to place and from animal to animal.

The cause of swine plague is the swine plague bacillus; it is positively known that this is the sole cause of the disease. If we can escape or avoid the cause of any disease we can with absolute certainty prevent the disease. This is the simple statement of an actual fact. Carrying out this idea in a practical way is a practical possibility, but sometimes attended with difficulties. We find the swine plague bacillus in the tissues, blood, secretions and discharges of every animal affected with swine plague, These are the only direct sources of this bacillus that are known. The disease spreads by the spread of its germs. Where the first pig became infected with swine plague bacilli is as little known as where the first pig itself came from, and is of little importance here. At the present time we can, however, trace both of them to direct ancestors, and can get them from no other source.

How do Healthy Pigs Become Infected.

Healthy pigs always become infected with the products, excretions or discharges of sick pigs.

1. Any of these products may become dry, reduced to dust, and inhaled by a healthy animal. The smallest visible particle of dust is large enough to carry with it hundreds of germs. In this way the lungs are affected and a cough or some form of pneumonia is the first symptom of the disease.

2. The food of healthy pigs may be contaminated with the discharges of sick ones. Here the stomach and intestines become the seat of the first morbid changes, and diarrhœa, constipation and other symptoms of digestive troubles are first observed.

3. Wounds, such as are produced by castration, may become infected by contact with infected excretions or discharges. Slight abrasions of any kind, even slight wounds inflicted by lice, answer the same purpose. In these ways general or blood infections take place.

After the germs leave the sick animal's body they may remain alive and able to produce disease a very long time. How long such germs remain active depends entirely on the conditions of heat, light and moisture under which they are kept and on the substance in which they are present. A warm, moist and dark place containing organic matter, decaying vegetation, manure, etc., is most favorable for their long continued existence. Great heat, dryness and direct sunlight tend to destroy disease germs of all kinds after a certain time. Mere drying, however, requires a very long time to destroy many disease germs. This is an important point in the question of disinfection.

We have seen how animals become infected with swine plague germs when diseased hogs are present. Now the question arises:

How are healthy and comparatively, or apparently, isolated herds infected and how are the disease germs transported from place to place?

Healthy herds become infected by the direct or indirect introduction of disease germs from infected herds. It is here proper to state that swine plague germs have no power of independent motion from place to place—they cannot fly. The disease, therefore, does not, and cannot, spread through the air. Dust-laden air may carry the germs, but here it is the dust particles to which the germs cling and not the air that acts as a carrier. Such infected dust is probably never carried any great distance. It is carried from pen to pen, when these are adjacent, but rarely to any greater distance.

The important distributing agents of the hog cholera germs are persons, animals, utensils and conveyances employed, or used in or about swine plague infected pens, also water courses, etc. Attendants carry the germs on their boots and in their clothing; animals carry them in the mud on their feet and in their hair coats; wagon wheels move infected dirt from place to place; utensils or vessels used in and about pens may harbor countless germs. Dogs and other animals, even birds, may spread the contagion from place to place. Finally, water courses, rivers, creeks, and drains or ditches of any kind that course through or near infected pens carry the disease germs from place to place. The amount of material thus moved and introduced into a healthy herd is entirely immaterial. A single germ, under favorable conditions, is just as capable of producing a fatal attack of disease as any number of millions. The extreme rapidity with which these simple organisms multiply readily explains this. *A single* *swine plague bacillus, in twenty-four hours, may have developed into many millions.*

When the bacilli have once been introduced into a herd they rapidly multiply and infection is only a question of a short time. The time required for a distinct outbreak of disease to appear after the germs have been introduced on the premises, must, of course, vary with the opportunities for infection. Constitutionally weak, sickly, very young or wounded (recently castrated) animals are attacked sooner than others. After the germs have once entered the body of an animal, that is, after infection of the animal has occurred, the first symptoms of disease will, as a rule, appear in the course of a few days, but a pig *may* harbor these germs five weeks before distinct symptoms of the disease can be noticed. The long time that may thus sometimes elapse accounts for many mysterious infections where no possible source or opportunity of infection can be recalled or imagined.

If swine plague is caused by certain species of bacteria and if these bacteria are the sole cause of this disease, we might ask, why does the disease occur only, or principally, in certain seasons of the year? This is easily explained. Fall and spring are the hog cholera or swine plague seasons. These are the times when the conditions of temperature and moisture are most favorable to the propagation of these disease germs and opportunities for infection are most numerous. At these seasons of the year traffic in hogs is at its highest. Pigs are bought, sold and exchanged, all kinds from many localities are put together in feeding pens, are fed poorly balanced rations that are intended to fatten a previously half-starved animal in the shortest possible time. This will do anything but aid an animal in resisting an attack of disease. Although no swine plague can develop without the swine plague bacillus, it is a well-known fact that all animals that are exposed to infection by this germ do not take the disease. Every animal has a certain natural power to resist disease. This power to resist disease varies exceedingly in different animals, just like growing and fattening qualities differ widely. Some animals possess this power to such a degree that they absolutely resist an attack of swine plague—even direct injection of pure cultures of germs has no disease-producing effect. Such animals are said to be *immune*. Other individual animals possess exactly opposite qualities; they cannot resist the slightest attack. This partly explains why some animals have mild attacks, others severe attacks; the former usually recover, the latter die. Still others, as above stated, are immune, and in some animals the disease takes a chronic course. Why and how all this is cannot be explained here, but this may be stated: The natural disease-resisting power of an animal can be artificially increased to such an extent that under ordinary conditions it will greatly aid the animal to successfully resist an attack of swine plague. Proper food, care and shelter, proper breeding, and avoiding everything that tends to weaken an animal's constitution are the points to be looked after. A fat, flabby pig fed almost wholly on corn stands the smallest chance of escaping a fatal attack. A half-starved animal cannot fare much better. In either case the food itself is not the direct cause of the disease, it has simply prepared the animal for a fatal attack.

We have now seen how animals become infected with the germs of swine plague, how the germs are conveyed from one animal to another through food, drink, inhalation of dust-laden air, and direct introduction through wounds, and how the germs are carried from one herd to another, from farm to farm, and, finally, the conditions which are most favorable for producing fatal infections. This prepares us for the main question:

How can we prevent swine plague?

The answer is plain: Avoid the swine plague germ, and, in addition, for the sake of both profit and health, feed and breed according to scientific principles.

The first injunction is the most difficult and important one. To fulfill it requires the utmost care and foresight. Nevertheless, it is mere child's play compared with burning cholera corpses, and certainly more remunerative.

Successful prevention of contagious and infectious diseases requires attention in every minute detail. We are dealing with an invisible enemy and, therefore, must constantly guard every possible port or means entrance.

To begin properly we should select a suitable site for the pig pen. A high, dry and light place, not near a stream, ditch or any other drain that could act as a carrier of germs either to or from the pens (our neighbors should be considered as well as ourselves, because we expect them to consider us). The pens should be built in such a way that they can be cleaned readily and thoroughly, and, if necessary, disinfected. They should be moderately high and have plenty of large doors and windows to admit air and sunshine; these latter are real tonics and at the same time they check the development of, or even absolutely destroy, disease germs.

Second. Have healthy pigs to begin with and feed them properly balanced rations; this increases their power to resist disease. Avoid inbreeding and the use of weak males. Keep the pigs free from lice and worms. It is a significant fact that most pigs that have cholera or swine plague are lousy or have intestinal worms! These parasites predispose animals to infection by germs. Use straw or other material for bedding or use no bedding at all, whichever suits your conditions better, but keep the sleeping quarters dry and as free from dust as is possible with proper care, and do not allow the pigs to burrow and sleep under an old straw pile or live in or under the manure heap.

It will be seen that the methods here suggested are radically different from those found in common practice, but this should not discourage any one. Our object in doing these things is the prevention of swine plague and hog cholera and increasing the profit of pork production by eliminating the greatest factor in the direction of loss. Past methods have so evidently failed to do this that nothing but a radical change of methods can be expected to accomplish anything.

Third. After doing everything possible toward beginning with a healthy herd and providing sanitary quarters and feeding wholesome food adapted to the ends desired, we must keep out the swine plague bacillus. This is done by personal or individual quarantine or isolation of the pigs and their pens. This is the whole thing in a nutshell. It is a most difficult problem, nevertheless it is absolutely possible.

Contagious pleuro-pneumonia of cattle is the cause of losses amounting to millions anually in many countries of Europe and other continents. This disease was introduced into America in 1843, and in the course of time by natural methods of spreading and reimportation from Europe a large number of the Eastern states became infected with this disease. Not until 1887 were serious attempts made by the United States Government to stamp out this disease. In 1892, after five years, the disease was officially declared to be eradicated by the Bureau of Animal Industry of the United States Department of Agriculture. This was done at a cost to the Federal Government of about one million, five hundred thousand dollars. The benefit to the cattle industry of America from this work can simply not be estimated. But the point that I wish to make is this: If a disease like contagious pleuro-pneumonia of cattle can be controlled and stamped out of a country as large as America, how much more simple a matter would it be to control a disease on a single farm? For example, hog cholera or swine plague. Both classes of diseases are due to micro-organisms; infection takes place in a similar manner, and although all details in handling the two problems are by no means identical, the principles upon which they depend are exactly the same. As long as the federal or state governments do not take the work in hand each farmer or swine-breeder must work out his own salvation. Concerted action and general co-operation of swine-breeders generally, made possible by associations, would simplify and aid matters materially. But this is said only by the way. Let us now consider the necessary means and methods at the disposal of individual owners.

I will repeat that strict individual quarantine is the basis upon which the solution of our problem seems to rest.

What is "Quarantine?"

"Quarantine" means a space of forty days, the time formerly required for a ship to remain isolated and forbear all intercourse with the shore when it was suspected of being infected with some contagious disease. At the present time "quarantine" means simply the complete isolation of any person, animal, building or premises for the necessary length of time to prevent the spread of a contagious or infectious disease.

A quarantine may be ordered by federal, state or local authorities, or it may be a personal or individual matter. At the present time personal quarantine by the owner of the swine is the most effective means for controlling swine plague, or hog cholera. In this case the owner quarantines the whole country to protect his own herd. This amounts to a simple trespass notice which every person is legally bound to observe.

Note the following instructions:

1. Let no unauthorized person approach within fifty feet of your hog-pens or yards. This includes everybody who you are not absolutely certain has not been with or near swine plague infected, or other hogs, or animals, or pens, or things which, or persons who, could in any possible way carry or harbor swine plague germs. The personal appearance of individuals is no criterion upon which to base distinctions. Always suspect everybody until proved innocent or harmless.

2. Permit no animals to which the above remarks may apply to approach nearer than fifty feet to your pens or yards where the hogs are kept. The same applies to wagons, carts, utensils, even food and clothing; in fact, to anything and anybody.

3. Instruct attendants to keep strictly away from cholera or swine plague infected, or any other kind of, hog-pens or premises where hogs are kept or have recently been.

4. Politely inform your neighbors that trespassing on your premises near your hog-pens is forbidden under penalty of the law and explain to them what the word trespassing as here used, means.

5. The owner of the hogs is just as liable to carry and introduce disease germs as anyone else; bear this in mind and act accordingly. If your neighbor's hogs are dying of some mysterious disease, take his word for it, but investigate no further; assume that it is cholera or swine plague and exercise increased vigilance. Do not go over to look at the sick hogs, you may soon have some of your own if you do.

6. The laws of Ohio forbid the transportation, in any way, of cholera or swine plague infected hogs, or hogs exposed to cholera or swine plague, or their carcasses or products. Special rules and regulations of the Board of Live Stock Commissioners also forbid such transportation. Persons violating these laws or rules are liable to heavy fines, ranging from fifty to five hundred dollars, in addition to other penalties. Remember this and be free in imparting this information wherever it is needed.

7. When any infectious swine disease is prevalent in your neighborhood or county exercise increased care in following the instructions here outlined. Re-read this bulletin occasioually.

8. Observe care in introducing new stock into your herds. Remember that a pig may have the swine plague germs in his system five weeks or more without showing ordinary symptoms of disease. Never buy stock pigs to feed; this is the best way known to infect your premises with swine diseases. No matter how good a judge you may think you are, you cannot recognize hog cholera or swine plague by simply looking at the pig. If you have followed this business for any number of years with good success, stop it now. The time will come when you will see your mistake.

9. Breed and raise your own animals; it is cheaper and better in every way, and no other way is safe.

10. If you must buy a new herd or a new boar, make careful inquiries as to the existence of the disease, and then, if everything looks safe, take the animals home and put them in a special pen, isolated from the rest, at least fifty feet away from other hogs, and quarantine them for six weeks; in the meantime keep careful watch for any signs of disease. If at the end of that time the animal or animals are still in perfect health and show no suspicious symptoms, and have had no possible opportunity to become infected while under quarantine, you may remove your restrictions and allow the newly acquired animals to mingle with the rest. This is going to some trouble, and, perhaps, expense, but do not expect results without these little incidentals.

Disinfection.

It would hardly be proper to close this article without a word about the subject of disinfection. The principles upon which disinfection depend are the foundation of sanitary science. At the same time it is no exaggeration to state that, as ordinarily practiced, disinfection is worse than useless. It is not only time and money wasted, but it gives a false feeling of security that may lead to great harm.

The object of disinfection is the destruction of disease germs, and of germs of putrefaction and decomposition. To be of any benefit, the process must be thorough and complete, otherwise it is not *disinfection.* When disinfecting for disease germs this is of special importance. It is a matter of destroying millions upon millions of invisble organisms. It, therefore, stands to reason that destruction of half of them, or three-fourths of them, or even of ninety-nine per cent. of their number is not sufficient. Every single germ may be destroyed! One germ that escapes may do as much harm as a million. The requirements for success are:

1. The proper preparation of the place to be disinfected.
2. The selection of a suitable disinfectant.
3. Thorough application of the disinfectant.

1. Clean the yards, pens, troughs, utensils, etc., to be disinfected. Remove all litter, rubbish and loose stuff of any kind; do not allow a particle to remain. Use a sharp hoe or spade, and then a broom to finish up. Haul this material, if it is good for manure, out on a level field where no drainage takes place and where no animals have access, spread it out in a thin layer and thus expose it to the action of the sun's rays. This will soon make the mass harmless. Do not expect the sun to disinfect great chunks; the particles must be fine, like a top-dressing for wheat. Material that cannot thus be utilized must be burned. Do not haul any of this material over roads that you will drive swine over the next time, and do not forget that the wagon also needs disinfection when you get through with it. Remove all loose, broken or rotten boards from the floor and sides and burn them. If there is a dirt floor, remove several inches of this or as deep as the secretions or excrements of the animals may have soaked down. Then treat this like the manure. Treat straw and manure piles that were exposed to infection the same way.

2. After thorough cleaning and destruction by burning of everything useless we are ready for our disinfectant. There are many good disinfectants. No particular disinfectant is better than all others. Some have one advantage, others another. Some are better for certain disease germs, others for other purposes. The odor of a disinfectant is no indication of its strength. The strongest disinfectants have no odor at all. For general disinfection crude carbolic acid is about as cheap as anything else and much safer than some others. We use it in five (5) per cent. solutions. This is approximately made by dissolving three tablespoonfuls of carbolic acid in one quart of water, or by dissolving one pound of the "acid" in two and one half (2½) gallons of water. *Unslaked* lime used freely is also a reliable disinfectant. For articles that can stand it, boiling for one minute destroys *all ordinary* disease germs.

3. The disinfectant is best applied with a spray pump. Wet, or soak, every inch of floor and wall space, outside and inside; the roof and ceiling of pig-pens must also be included. See that every crack and crevice comes in touch with the liquid. Every nail-hole must be wet with it. Allow nothing to escape. Don't forget sills, rafters, cross-beams and shelves. The dirt floor must be thoroughly soaked with the disinfectant. Troughs and utensils, wagons, tools, in short everything must be treated in the same way. When you are through disinfect your shoes in the same way, and your clothes by boiling them.

Then open all doors and windows wide and give the air and sunshine free access for a week or ten days. If this work is done thoroughly no dangerous disease germs will be left and the pens will be safe once more.

Yards of any size, and particularly where much rooting has been done by the pigs, cannot easily be disinfected. A good plan is to seed these down; best with some crop to be cultivated, and in the course of a year the ground will be safe.

These are brief directions for disinfection of disease-infected quarters, after the diseased animals have been removed and the dead ones destroyed by burning.

Disinfection for other purposes need not be so thorough, because putrefaction and decomposition germs are everywhere and cannot be completely removed. With them our object is simply to reduce numbers. The more thoroughly this is done, of course, the better. For this latter purpose all pens and stables should be cleaned and disinfected whenever and as often as they need it. This varies with different conditions, places, and the person that does the work. Where pens or farms have become infected with cholera the plan above outlined should be followed and then no pigs kept on the place for one year; or, if the time extends over the hot season, six months will suffice. After this, new stock, by observing the precaution of quarantining six weeks, may with safety be introduced. Under no considerations be induced to buy from neighborhoods where infectious or contagious swine diseases of any kind are reported to exist.

Summary.

1. Swine plague and hog cholera are infectious and contagious diseases.
2. The causes of these diseases are invisible "germs," called bacteria.
3. These germs can be carried in food, water, clothing, mud on the shoes of persons or on the feet of animals, by dogs, birds, and other animals, utensils, etc.
4. Infection takes place through dust-laden air, contaminated food and drink, wounds of castration, bites of lice, etc.
5. Curative treatment is useless or impracticable.
6. Prevention is possible and practicable.
7. Food does not and cannot produce cholera nor swine plague.
8. Susceptibility in animals varies, some are readily attacked, a few are immune.
9. Proper food and care, and judgment in breeding, increases the animal's power to resist disease. Poor food and care have the opposite effect.
10. Buying stock hogs or feeders is a dangerous plan. Farmers should breed and feed their own pigs.
11. Personal quarantine is at present the only solution of the hog cholera and swine plague problems.
12. The laws of the state regarding infectious swine diseases should be observed if good results are expected. Farmers and swine breeders should co-operate in the matter. The successful solution of this problem lies in their hands. The Board of Live Stock Commissioners is anxious to do all in its power, but without active assistance from the persons most interested its efforts must be futile.
13. Disinfection is one of the fundamental principles of sanitation. As ordinarily practiced it is worse than useless. To accomplish its object it must be absolutely thorough and carried out with a correct understanding of the results aimed at.

[APPENDIX F.]

REQUEST FOR INSPECTION AND TUBERCULIN TEST OF HERD AT EXPENSE OF BOARD OF LIVE STOCK COMMISSIONERS.

...................., 190..

To the Board of Live Stock Commissioners of Ohio, Columbus, O.:

GENTLEMEN—I have reason to believe that some of my cattle are afflicted with tuberculosis and wish to have my entire herd inspected and tested with tuberculin and the diseased animals disposed of according to the rules and regulations of your Board.

I understand that this inspection and test are to be made at the expense of the state, and in consideration thereof I agree thereafter to observe the precautions and measures and to comply with the means recommended by your Board, to prevent the reintroduction and redevelopment of tuberculosis in my herd.

I certify that the cattle for which I request an inspection and test have been in my possession since ....

Yours respectfully,

(*Address*) ....

.... *County, Ohio.*

My herd contains the following animals: Cows....; heifers over one year old....; bulls over one year old....; steers....; calves under one year old....; total........ The milk from this herd is used by........ ...., for ....

The cattle are ....

(Breed.)

The following are my reasons for believing that some of my cattle are afflicted with tuberculosis: ....

....

....

....

RULES AND REGULATIONS

OF THE BOARD OF LIVE STOCK COMMISSIONERS FOR INSPECTING AND TESTING CATTLE WITH TUBERCULIN, AND MEASURES RECOMMENDED to PREVENT the RE-INTRODUCTION AND RE-DEVELOPMENT OF TUBERCULOSIS.

(*a*) The owner of the cattle to be tested must agree to furnish all necessary assistance.

(*b*) All reacting (diseased) animals must be killed and burned or buried or sold to fertilizer works for fertilizer purposes. The hides may be removed and sold by the owner.

(*c*) After all diseased cattle have been removed the stable or stables must be disinfected according to the directions which follow, viz:

Remove all manure, litter, fodder, etc., scrape floors and walls with a sharp hoe and thus remove every particle of dry manure, dirt, etc. (this cannot be done too thoroughly); remove all rotten and loose woodwork, boards, etc., from the sides and floors; sweep the mangers throughly and remove all accumulations of food and waste in and about them. Scrub the mangers and feed-boxes with hot water and soap or with a solution of lye. Then apply the disinfectant. One of the cheapest and best substances for this purpose is a one-tenth to one-fifth per cent. solution of bichloride of mercury—(a 5 per cent. solution of carbolic acid may be used instead, is very efficacious, but more expensive than bichloride of mercury)—made by dissolving one ounce of this substance in eight gallons of water for a one-tenth per cent. solution; two ounces for a one-fifth per cent. solution. Dissolve first in one gallon of hot water and then add the rest of the water. This solution is highly poisonous, as are all strong disinfectants, and should be kept out of the reach of children and animals. It corrodes metal and is, therefore, best prepared in wooden or earthen vessels. It is applied with a brush or sprinkling can, or better, a spray pump.

Every particle of exposed surface, every crack or crevice, nail hole, etc., of the walls, ceilings, mangers and feed-boxes must be soaked with this solution. Poor or careless disinfection is no disinfection at all. A saturated solution of sulphate of iron should then be used to soak the floors, gutters, drains, etc. After everything is dry the entire interior of the stable may be whitewashed. The mangers and feed-boxes must then be washed with hot water to remove the bichloride of mercury, which might otherwise poison the animals.

After this the stable should, if possible, remain perfectly empty for a few weeks, and during this time and ever after exposed to as much air and sunshine as possible; both of these are enemies of disease germs and conducive to good health in animals. All litter, rotten wood, etc., removed previous to disinfection should be burned, or removed to a safe place. Manure would best be spread in a thin layer on a large flat field and thus exposed to the disinfecting action of the sun's rays. If there is a dirt floor in the stable several inches of the top layer should be removed with the manure.

In introducing new animals into the herd the tuberculin test must always be required, and the original herd should be re-tested with tuberculin every year until no more traces of disease are found to exist.

[APPENDIX G.]

COLUMBUS, October, 1902.

REGULATIONS FOR THE TRANSPORTATION OF SHEEP AFFECTED WITH SCABIES.

To the Managers and Agents of Railroads and Transportation Companies of the State of Ohio, Stockmen and Others:

To protect the sheep industry of this state the Board of Live Stock Commissioners of Ohio hereby declares the following regulations affecting traffic in sheep:

> From and after October 15, 1902, no sheep affected with scabies, and no sheep which have been in contact with others so affected, shall be allowed to be moved, shipped or driven from any point within this state to any other point unless said sheep shall have previously been dipped twice, at intervals of ten days, in a mixture approved by this Board.

The dips now approved by the Bureau of Animal Industry of the United States Department of Agriculture, Washington, D. C., and which have been adopted by this Board, are:

> 1. THE TOBACCO AND SULPHUR DIP, made with sufficient extract of tobacco to give a mixture containing not less than five one-hundredths of one per cent. of nicotine and two per cent. flowers of sulphur.
>
> 2. THE LIME AND SULPHUR DIP, made with eight pounds of unslaked lime and twenty-four pounds of flowers of sulphur to one hundred gallons of water. The lime and sulphur should be boiled together for not less than two hours, and all the sediment allowed to subside before the liquid is placed in the dipping vat. When using either of these dips it is best to keep them at a temperature as near 110 degrees Fahrenheit as possible, stirring frequently. If the weather permits the sheep may be sheared before being dipped. Each animal must be kept in the dip two minutes, and the head as well as other parts of the body must be made thoroughly wet with the dip.

The penalty for violation of these regulations is from fifty dollars ($50) to five hundred dollars ($500), in addition to the penalty for violating any of the provisions of sections 4211-9 to 4212 inclusive of the Revised Statutes of Ohio.

THE BOARD OF LIVE STOCK COMMISSIONERS.

PAUL FISCHER, *Veterinarian.* W. W. MILLER, *Secretary.*

NOTE—Additional copies of this circular can be had by applying to the Board of Live Stock Commissioners.

TUBERCULOSIS IN CATTLE.

The numerous inquiries concerning tuberculosis and the frequent requests for examinations and tuberculin tests of dairy herds that have been received by the State Board of Live Stock Commissioners, indicate that the farmers of Ohio take a live interest in the solution of the tuberculosis question.

A great deal has been said and written about the disease in the past few years, but many published statmenıs are so far from being accurate representations of well known facts that a widespread confusion as to the importance of tuberculosis to cattle owners has arisen, and there seems to be a demand for accurate information on this much discussed subject.

What is tuberculosis? What are the symptoms of tuberculosis? Is tuberculosis a contagious disease? Does tuberculosis occur in man? Does tuberculosis occur in other farm animals than cattle? What is the cause of tuberculosis? Is tuberculosis curable? What shall be done with a herd in which the disease has made its appearance? What does the State Board of Live Stock Commissioners offer the farmers of Ohio in the form of aid in solving this problem? Does the State pay the owners of tuberculous cattle?

These are some of the questions most frequently asked, but none is so often heard as the last one, "Does the State pay the owners for tuberculous cattle?"

This clearly indicates that the financial end of the question is one that affects the farmers' interest. Whether the disease affects human beings, or in any way endangers their health, is secondary in the minds of some cattle owners. Important as this last question undoubtedly is, it is a matter than concerns, in a public way, the various boards of health. The State Board of Live Stock Commissioners is primarily interested in the economic phase of the question, in the health of the domestic animal. From this point of view the above questions with a few others, will be briefly considered in the following pages. Care has been taken to state nothing but clearly established and generally accepted facts.

Definition. Tuberculosis is an infectious and contagious disease that is caused by the tubercle bacillus. The disease may attack any or all organs of the body, but the lungs and the abdominal organs are the most frequent seats of the morbid changes.

Duration of the Disease. The course of tuberculosis is usually chronic, extending over months and years. In certain subjects the disease results in death in a short time, although this is the exception. Chronic and slowly developing cases may at any time become acute and end rapidly in death.

Occurrence. Tuberculosis occurs in practically all warm-blooded animals, including man, and may be transmitted to man by the lower animals and vice versa. No domestic animal is exempt from possible attack, although some species are much more susceptible than are others. Cattle suffer more by far from this disease than other animals. In swine it is more common than is generally supposed. The horse, dog, cat, sheep and goat are also occasional victims. The disease is often observed in the chicken, especially where opportunities for infection are offered by tuberculous (consumptive) attendants.

Prevalence. Tuberculosis occurs in all civilized countries. One-seventh of all deaths among human beings are ascribed to this cause. Among farm animals it is most common where cattle are extensively raised, and where they are kept under highly artificial conditions, which are at the same time unhygienic. Close housing, poor ventilation and improper drainage, unsuitable food and impure water, etc., favor the development and spread of tuberculosis. Increased traffic in cattle is also a factor to be considered in explaining the increased prevalence of the disease in late years which has given rise to the erroneous belief that tuberculosis is a new disease. The fact is that tuberculosis was known to exist many centuries ago.

A few brief statistics will give an idea of the importance that this disease has assumed in other countries. Carefully kept slaughter-house records show that the percentages of tubercular cattle in various countries are as follows:

Amsterdam, Holland	13 per cent. of all cattle (Over 3½ per cent of all swine.)
Prussia	15 per cent. of all cattle.
Saxony	30 per cent. of all cattle. (Over 3 per cent. of all swine.)
Certain departments of France..	25 per cent. of all cattle.

In England, James Wilson, Lecturer on Agriculture in Aberdeen University, states that the British farmer and stock owner lose annually about fifteen million dollars from tuberculosis in cattle. A herd of eighty pure bred Short Horns, intended for export from England to the United States, contained thirty-four tubercular animals, 42 per cent.

In the United States carefully compiled statistics are not available, but the disease is mostly found in the crowded districts near the large cities of the Eastern States. In isolated cases the prevalence of the disease is observed, although the figures obtained are not nearly as high as are those of European countries. The same may be said of Ohio, where the disease is known to exist as well as in any other civilized country, but there are good reasons for believing that it is less frequently met with here than in some of the Eastern states, and that some regions are comparatively free from it.

The Cause of Tuberculosis. The direct or exciting cause of tuberculosis is the tubercle bacillus. Nothing else can produce tuberculosis, and on the other hand, the tubercle bacillus can produce no other disease. Poor food and care, in themselves, can never produce tuberculosis; they can, however, so affect the body of an animal that its tissues become a more favorable soil for the development of the tubercle bacillus and thus increase the animal's susceptibility to the disease. Unscientific breeding of any kind acts in a similar manner. The disease itself, except in the rarest cases, is not inherited by the offspring.

Predisposition and Susceptibility. On account of certain weaknesses or defects of constitution, either inherited or acquired in later life, certain animals seem to be more liable to contract tuberculosis than others. Such animals are said to be predisposed to the disease, or to have a special predisposition or susceptibility. The two terms are of similar meaning.

The Tubercle Bacillus. The tubercle bacillus is a minute vegetable parasite that is visible only with the aid of a very powerful microscope. It exists, as far as definitely known, only in the bodies of animals that have tuberculosis, or in the excretions or products of such animals. The original source of the tubercle bacillus is not known any more than we know where the first cow came from.

Meat and Milk from Tuberculous Animals. The meat and milk from tuberculous animals may, and frequently do, contain the disease-producing organisms in large numbers. The use of products from tuberculous animals as food for other animals or for human beings may be the cause of the development of the disease.

How Does an Animal Contract Tuberculosis? Tuberculosis can be contracted in one way only, and that is by the entrance of the tubercle bacillus into the body of a susceptible animal and its consequent growth and development in the tissues of the body.

How Does the Tubercle Bacillus Get Into the Body? The tubercle bacillus may gain an entrance into the body in any one of three or four ways. First: It may be inhaled into the lungs in the form of dust. The dust of a room occupied by a tuberculous person, or that of a stable containing affected animals always contains these germs which are discharged from the body with the sputum by persons, and with the expectoration and other excretions in the case of animals. Infection in this manner causes pulmonary tuberculosis (pulmonary consumption of human beings). Second: The food may be contaminated with the excretions of tuberculous subjects. Where cattle are stabled the saliva from an affected animal may contaminate the food of its neighbor and in this way the disease is commonly spread. This explains the fact that when a number of cattle are affected in the same stable they are usually found grouped together and near the animal that introduced the disease into the herd. The feces of animals may be the carriers of the germ. This is of special importance where hogs "follow" cattle. The use of meat, milk, or any other product of a tuberculous animal, as food, may be the cause of tuberculosis. Thus calves are infected by suckling dams that have tuberculous udders. Third: The bacilli may enter wounds and then be carried to all parts of the body by the blood. Fourth: The act of copulation may be the means of transmitting the disease, when either the male or female generative organs are affected. The sources and opportunities of infection are thus seen to be varied and numerous.

The Appearance of the Organs of Tuberculous Animals after Death. The changes found in the body of an animal affected with tuberculosis vary with the age of the disease and with the organs affected. The commonest changes consist of nodules or "tubercles," which are most frequently found on and in the lungs, on the lining of the chest cavity, on the abdominal organs and on the lining of the abdominal wall. These tubercles vary in size from minute bodies as large as millet seeds to enormous tumors. They may occur singly or in large clusters. The larger ones, upon being cut open ,usually discharge a yellowish cheesy, or pus-like mass. The tubercles on the surface of the lungs are pinkish in color and have an irregular, wart-like surface. The lymph glands in any part of the body may be converted into masses of the cheesy nodules described above.

The Symptoms of Tuberculosis. The symptoms of tuberculosis depend entirely upon the location and the extent of the disease, and are frequently very difficult to recognize. Thus we may find the symptoms of a chronic lung affection, characterized by cough, discharge from the nostrils, difficulty or other peculiarities of breathing, running down in condition, etc. Affections of the abdominal organs may cause diarrhœa, constipation, bloating and other symptoms of indigestion. Affections of the brain cause cerebral disturbances, such as impairment of sight, peculiarities of behavior, dullness or even great excitability. When the udder is affected this organ may present various modifications, hard lumps, abscesses, changes in the quantity and quality of the milk, etc., or nothing abnormal may be noticed. Some animals may seem to be in perfect health and yet the disease may be quite advanced and may assume the acute form at any time. Such animals constitute dangerous sources of infection. But even when they are present, none of the symptoms above given are strictly characteristic of tuberculosis, since all of them may be absent, and any or all of them may occur in the course of some other disease. Then

How Shall We Recognize Tuberculosis? The history of the herd is of especial importance in this connection. If the herd or some animal in the herd has not been thrifty for some time in spite of the best food and care, if there have been occasional deaths from unknown causes, if some animals cough occasionally, or continually, and, finally, if the herd is composed of animals recently bought up from various doubtful sources, public stock yards for example, there is good ground for suspicion that tuberculosis may exist. Abortion and barrenness are also common manifestations of the disease, but they may also result from other causes. In order to get definite and reliable information on the matter we must resort to

The Tuberculin Test. This consists in the careful measurement of the animal's temperatures, followed by the injection of a certain quantity of tuberculin into the loose tissue under the skin. Within from eight to sixteen hours from the time of the injection of the tuberculin the temperature of the animal, if tuberculous, will become elevated in a characteristic way. If the animal is healthy no such elevation of temperature will take place. In making this test certain precautions, which cannot be given here, must be observed, and careful physical examinations must in some cases be made in order to avoid possible errors in diagnosis.

Is the Tuberculin Test Reliable? Although this test is not an infallible means of making a diagnosis for tuberculosis, it is the next thing to it. The results obtained from this test are more accurate than those obtained from any other known method of diagnosis for any other internal disease. By the use of tuberculin it has become possible to exterminate tuberculosis from a herd without sacrificing healthy animals.

Tuberculin. This is a liquid extract, so to speak, made from artificial cultures of the tubercle bacillus. Before it is ready for use it is subjected to the action of a temperature that is absolutely known to kill all tubercle bacilli, and then the dead bacilli are removed by a special process of filtration. Consequently

Tuberculin Cannot be Injurious to Healthy Cattle, and it causes no serious permanent disorder in diseased animals.

What Shall Be Done With Tuberculous Cattle? After the diseased animals have been recognized they should be immediately separated from the remaining healthy ones, to prevent the further spread of the disease. The quarters selected for the healthy animals, unless they have never been occupied by cattle before, should previously have been thoroughly disinfected, otherwise separation will amount to nothing. The affected animals can be disposed of in different ways, depending on conditions peculiar to each individual case. Badly affected animals must be killed and their carcasses destroyed by burning or deep burial. The carcasses of animals with certain forms of the disease (local forms), if not advanced may *under certain conditions* be utilized for beef. Healthy calves can be raised from slightly affected dams, but this is a procedure that is attended with many difficulties and drawbacks, and is usually not desirable unless the dam, for some reason, is an exceptionally valuable animal.

The Cure for Tuberculosis. Although cases of apparent recovery are sometimes met with, a real cure for this disease in cattle has not yet been found. The only remedy that has proven satisfactory is the immediate or gradual destruction of all affected animals and the careful isolation of the healthy ones. Improvement in our methods of feeding and general care, housing, etc., plays the most important part in the solution of this question.

Is it Desirable that Herds be Kept Free from this Disease? The control of tuberculosis in cattle is desirable for two reasons. In the first place it is a question of economy, a question of profit and loss in the dairy and in the beef feeding business. Secondly, it is a matter of hygienic importance in as far as it concerns the health of human beings that use meat and milk or other dairy products for food. But leaving the most important phase of the question entirely aside, that of the health of human beings, what are some of the economic reasons for controlling the spread of tuberculosis among cattle? There are several ways in which the disease may cause losses.

1. By direct loss of the animal through death.
2. By reducing the market value of an animal through loss of flesh.
3. By reducing the quantity and quality of the products of the dairy or beef animal and consequently the profits.
4. By the danger of infecting other animals, cattle and swine.
5. By reducing the breeding value of an animal—abortion, sterility, etc.
6. By injuring the reputation of a herd.

What is the State Board of Live Stock Commissioners Doing to Aid the Farmers in Solving the Tuberculosis Prblem? The State Board of Live Stock Commisssioners will test, free of charge to the owners, any dairy herds in the State of Ohio that are suspected of containing tuberculous animals, and give advice as to the best manner of getting rid of the disease. The conditions under which these tests will be made are as follows:

1. The owner of the herd to be tested must make a written application, on a form furnished for the purpose, to the State Board of Live Stock Commissioners, and in this application state his reasons, which must be acceptable to the Board, for believing that some of his cattle are tuberculous, and express his willingness to comply with the rules of this Board for regulating the spread of tuberculosis.

2. All reacting (tuberculous) animals that are in an advanced stage of the disease, or that show symptoms of udder affection, must be destroyed at once. All other reacting animals (i. e., those in apparent health) must be at once isolated from the remainder of the herd, which has been found free from all symptoms of the disease, and kept strictly isolated until disposed of either by slaughter and complete destruction of the carcasses by burning or burial, or by slaughter in abattoirs that are under the control of the Federal Meat Inspection Laws. Such cattle must be disposed of within one year from date of test.

This enables the owner to receive the market value for those animals that are fit for food, but he must bear the complete loss of those only that are dangerous for food purposes and consequently worthless any way.

At the present time the State has provided this Board with no funds whatever to compensate the owners for the loss of cattle in an advanced stage of the disease. Nevertheless, by disposing of diseased cattle according to this plan nothing but a decided advantage can result.

1. *Cattle belonging to the first class (those in an advanced stage of the disease and those with udder affection) are worse than worthless, being highly dangerous to the health of other animals, to say nothing of the health of attendants, and cannot possibly be a source of profit to the owner. Milk from such animals is also a dangerous article of food.*

2. *Animals belonging to the second class (those in apparent health) are a source of danger to the still healthy animals, are not making the profit for the owner that they should make, and are growing less in value every day. The milk from this class of animals may also be dangerous.*

3. Milk from animals not in an advanced stage of the disease, and that are free from all symptoms of udder tuberculosis may be sold, or it may be used for feeding to other animals, but only after having been boiled, or after having been Pasteurized by heating it not less than twenty (20) minutes at 140 deg. F. (60 deg. C.). This destroys all tubercle bacilli, hence removes all danger of infection, and the Pasteurization does not in any way injure the milk or cream (consistency or creaming properties).

4. After the tuberculous cattle have been removed, the stable in which the remaining healthy cattle ars to be kept must be cleaned and disinfected according to the rules of the State Board of Live Stock Com-

missioners. The necessary changes to insure better sanitary conditions must also be made.

These changes consist principally in providing thorough drainage and in the admittance of a plentiful amount of light and air by providing windows and ventilators where they are needed.

5. Calves dropped by tuberculous animals during the year which they are permitted to be retained must immediately be removed from their dams and raised on milk from healthy cows or on boiled or Pasteurized milk from reacting animals.

6. All newly introduced stock must be tested with tuberculin and found free from tuberculosis before it may be allowed to mingle with the healthy herd.

(This must be done at the owner's expense).

7. Within six months or one year after the first test a second test will be made at the expense of the State (providing this is deemed necessary at the time of making the first test) in order to detect any affected animals that may have failed to react at the first examination. After the herd has been declared free from tuberculosis the owner must agree to do all he can to keep his herd healthy by keeping the surroundings in a sanitary condition and by permitting none but healthy (tested) animals to be introduced into his herd.

THE STATE BOARD OF LIVE STOCK COMMISSIONERS.

NOTE:

Bulletin No. 1. The Prevention of Swine Plague and Hog Cholera.
Bulletin No. 2. Tuberculosis in Cattle.
Additional copies of above bulletins will be sent upon application.

Thirty-Seventh Annual Meeting

OF THE

OHIO STATE HORTICULTURAL SOCIETY

Held in the Court House in the City of Delaware, Ohio,
Wednesday, Thursday and Friday, Dec. 9, 10 and 11, 1903.

Orgauized in 1847 as "Ohio Pomological Society."

Ohio State Horticultural Society.

OFFICERS FOR 1904.

W. W. FARNSWORTH, President	Waterville, Ohio
U. T. COX, Vice-President	Rockwood, Ohio
E. M. WOODARD, Secretary	R. D. No. 2, Willoughby, Ohio
R. J. TUSSING, Treasurer	Canal Winchester, Ohio

EXECUTIVE COMMITTEE.

E. H. CUSHMAN	Sylvania, Ohio
WM. MILLER	Gypsum, Ohio
SAMUEL TAYLOR	Grove City, Ohio

ALSO PRESIDENT AND SECRETARY.

LIBRARIAN.

W. J. GREEN	Wooster, Ohio

COMMITTEE ON VEGETABLE PATHOLOGY,

PROF. A. D. SELBY	Wooster, Ohio

List of Counties in Various Districts and Members of Ad Interim Committee.

FIRST DISTRICT—Williams, Fulton, Lucas, Defiance, Henry, Wood, Paulding, Van Wert, Hancock, Putnam.—C. C. Sterling, Grand Rapids, Wood Co.

SECOND DISTRICT—Mercer, Auglaize, Hardin, Darke, Shelby, Logan, Champaign, Allen, Miami.—Isaac Freeman, Tippecanoe City, Miami Co.

THIRD DISTRICT—Butler, Preble, Montgomery, Greene, Warren, Clinton, Hamilton, Clermont, Brown.—A. Shirer, Dayton, Montgomery Co.

FOURTH DISTRICT—Ottawa, Sandusky, Erie, Seneca, Huron, Wyandot, Crawford, Richland.—M. J. Persing, Clyde, Sandusky Co.

FIFTH DISTRICT—Marion, Morrow, Knox, Union, Delaware, Licking, Clark, Madison, Franklin.—W. R. Lawrence, Marion, Marion Co.

SIXTH DISTRICT—Fayette, Pickaway, Fairfield, Highland, Ross, Pike, Adams, Jackson, Scioto, Gallia, Lawrence.—R. L. Renshaw, Lancaster, Fairfield Co.

SEVENTH DISTRICT—Lorain, Cuyahoga, Medina, Geauga, Lake, Ashtabula.—R. A. Hunt, Euclid, Cuyahoga Co.

EIGHTH DISTRICT—Ashland, Wayne, Summit, Stark, Holmes, Coshocton.—L. B. Pierce, Tallmadge, Summitt Co.

NINTH DISTRICT—Muskingum, Guernsey, Belmont, Perry, Morgan, Noble, Monroe, Hocking, Vinton, Athens, Meigs, Washington.—J. D. Imlay, Zanesville, Muskingum Co.

TENTH DISTRICT—Trumbull, Mahoning, Columbiana, Tuscarawas, Carroll, Harrison, Jefferson, Portage.—J. A. Lawrence, Harlem Springs, Carroll Co.

Program of the Thirty-Seventh Annual Meeting of the Ohio State Horticultural Society, held at the Court House, Delaware, Ohio, Wednesday, Thursday and Friday, Dec. 9, 10 and 11, 1903.

WEDNESDAY MORNING.

Arranging of exhibits, etc.

WEDNESDAY AFTERNOON.

Report of Ad Interim Committee.

Reports from County Horticultural Societies.

Report of Delegates to American Pomological Society—Prof. W. R. Lazenby, E. M. Woodard.

WEDNESDAY EVENING.

Address of Welcome—Mayor H. C. Clipinger.

Response and Address—President William Miller.

Address—J. W. Bashford, President Ohio Wesleyan University.

Results with Sulphur Spray—Prof. P. J. Parrott, Geneva, N. Y.

THURSDAY MORNING.

The Amount of Waste in Different Varieties of Fruit—Prof. W. R. Lazenby.

The Water Factor—Prof. A. D. Selby.

Flowers and the Lawn—L. B. Pierce.

The Pedigree Question—Prof. S. A. Beach, Geneva, N. Y.

Fruit Notes—Prof. W. J. Green.

THURSDAY AFTERNOON.

(Small Fruits.)

Strawberries—W. W. Farnsworth.

Raspberries—F. H. Ballou.

Blackberries—W. N. Scarff.

Currants and Gooseberries—C. W. Montgomery.

Principles vs. Rules in Orchard Management—Prof. S. A. Beach.

Mulching Orchards—Prof. W. J. Green.

THURSDAY EVENING.

The Season's Outbreak of Diseases—Prof. A. D. Selby.

The Relationship of Horticulture to Various Phases of Life—A Symposium conducted by Prof. W. R. Lazenby ("A merry feast," consisting of 20 *three-minute* speeches by Ohio hosticulturists.)

FRIDAY MORNING.

Report of Nursery and Orchard Inspection.

Report of Librarian.

Report of Executive Committee.

Report of Secretary.

Report of Treasurer.

Election of Officers.

Business.

CONSTITUTION

OF THE

Ohio State Horticultural Society.

1st.—The Society shall be known as the OHIO STATE HORTICULTURAL SOCIETY.

2d.—Its object shall be to select and disseminate information relative to fruits and other horticultural products, and to promote the taste for horticultural and rural embellishments among the people.

3d.—Its officers shall be a President, Vice-President, Secretary and Treasurer, who shall, in addition to the official duties, constitute a board, empowered to fill all vacancies that may occur during the year by death or resignation. They shall be elected annually, by ballot, and hold their office until their successors are elected, but the Secretary shall not enter upon the duties of his office until the first day of August following his election.

4th.—The President shall preside, and conduct all meetings of the Society, and in his absence the Vice-President shall perform the same duties.

5th.—The Secretary shall record all doings of the Society, perform all correspondence, and with the assistance of the President collate and prepare the annual report and other matters for the public press.

6th.—The Treasurer shall collect and hold all funds of the Society, and pay out the same only on the order of the Secretary, countersigned by the President.

7th.—The membership fee shall be one dollar a year, payable in advance, and any person can become a member of the Society by forwarding the fee to the Secretary or Treasurer. All delinquent members shall be notified by the Secretary not later than February 1st of each year, and shall not be entitled to the annual report of the proceedings of the Society until their dues are paid. If the dues are not paid before January 1st following, their names shall be stricken from the list of membership.

8th.—There shall be an Ad Interim Committee, consisting of the officers of the Society and ten other members, residents of different sections of the State, representing specific districts, to be elected annually, whose duty it shall be to observe and take notes of new and rare fruits, the fruit crops, and other matters of interest to the Society during the season, in their several sections of the State, and report the same at the annual meeting of the Society. It shall also be the duty of the members of this Committee to solicit membership to the State Society, and to encourage the establishment and promote the interests of local horticultural societies in their respective districts.

9th.—The annual meeting of the Society shall open on the first Tuesday after the third Monday in December of each year, at such place as may be designated by a vote of the Society, notice of the time and place, together with the order of exercises, to be sent in due time to each member by the Secretary. At this meeting the President will be expected to deliver an address, and the report of the Ad Interim Committee, Standing Committee, Secretary and Treasurer, shall be read, and the usual business transacted, besides papers and discussions on horticutural topics.

10th.—There shall be an Executive Committee, consisting of the President, Secretary and three other members of the Society, to be chosen by the President, which committee shall have general charge of the affairs of the Society.

11th.—This constitution may be amended, and by-laws may be adopted for the government of the Society, by a vote of two-thirds of the members present at any regular meeting.

At the annual meeting, held at Newark, December 6th-8th, 1899, the following amendment was unanimously adopted, viz.:

The President of the State Horticultural Society is hereby authorized to appoint a commission of three, which committee shall make provision for the proper nursery inspection, providing no action shall be taken by the State Legislature.

STATE FAIR MEETING, 1903.

Meeting of the Society was held at Townsend Hall September 3rd at 7:30 P. M.

On motion the President and Secretary were instructed to arrange the date of the annual meeting in December.

Mr. Lowell Roudebush moved that the Horticultural Society make an exhibit at the St. Louis Exposition, provided the Ohio Commissioners pay the preliminary expenses in the sum of $1,500. Seconded by S. R. Moore. Motion carried.

The Executive Committee were instructed to meet with the President of the Commission on the following day.

The Executive Committee reported that they had chosen the Secretary as a delegate to the meeting of the American Pomological Society at Boston.

Prof. Wm. R. Lazenby was also elected a delegate to said society.

Professors Lazenby and Price and F. H. Ballou were appointed a committee to examine the fruits on exhibition.

A committee consisting of F. H. Ballou, R. J. Tussing and W. J. Green was appointed by the President to recommend changes that seemed advisable in the premium list and rules and regulations governing the horticultural department of the State Fair.

E. M. WOODARD, Secretary.

At a meeting held on the State Fair Grounds, Columbus, Ohio, September 4, 1903, at which several of the leading industries of the state were represented, the sentiment was very freely and unanimously expressed: That the varied interests of the State of Ohio should be represented at the St. Louis Exposition, under the general supervision and entire expense of the State Commission; that a superintendent of each department should be chosen to care for each exhibit, with the approval of the State Commission. We feel sure that every organized interest in the state is willing to cooperate with the Commission in every way possible. Therefore

Resolved, That we ask the Ohio World's Fair Commission to appoint a superintendent for each industry with the approval of each of the associations hereafter named; viz., Agricultural, Horticultural, Dairying, Wool-growing, and Live Stock, in all, five departments; said superintendent to be under the authority and direction of said Commission, to remain in St. Louis as long as deemed advisable by the Ohio State Board of Agriculture; said superintendent to have all necessary expenses paid in collecting and arranging such exhibits, and to receive a per diem salary of not exceeding five dollars. Be it further

Resolved, That we ask the Commission to appropriate not less than $40,000 in the aggregate for the various industries, $2,000 of which shall be available at once for each of the associations heretofore named.

E. M. WOODARD,
L. P. BAILEY,
S. H. ELLIS,
W. N. COWDEN,
Draft Committee.

After the foregoing resolutions were adopted the following committeemen were chosen to represent the different associations at a joint meeting of the Ohio Commission and the Ohio State Board of Agriculture, said meeting to be called by the Secretary of the State Board of Agriculture and the President of the State Commission:

REPRESENTATIVE COMMITTEE.

Agricultural Interests—S. H. ELLIS, Waynesville, O.

Horticultural Interests—E. H. CUSHMAN, Sylvania, O.

Dairymen's Interests—L. P. BAILEY, Tacoma, O.; D. A. CROWNER, West Jefferson, O.

Woolgrowers' Interests—LOWELL ROUDEBUSH,, Nicholsville, O.

Live Stock Interests—To be chosen by the State Board of Agriculture.

Secretary W. W. Miller will notify each member of the committee when the joint meeting will be held.

E. M. WOODARD,
Secretary of the meeting.

(A copy of the foregoing resolution was immediately forwarded to the President of the Commission.—Secretary.)

PROCEEDINGS OF THE THIRTY-SEVENTH ANNUAL SESSION

OF THE

Ohio State Horticultural Society

WEDNESDAY AFTERNOON SESSION.

December 9, 1903.

THE OHIO STATE HORTICULTURAL SOCIETY met in Thirty-Seventh Annual Session in the Court House in the City of Delaware, Delaware County, Ohio, and was called to order at 1:30 P. M. by President William Miller, who announced the first exercises on the program would be prayer by Chaplain G. W. Collier.

After prayer President Miller said: The next upon our program will be the report of the members of the Ad Interim Committee. We will hear the report from the first district, Mr. C. C. Sterling.

FIRST DISTRICT.

C. C. STERLING.

With April and May weather in March and March weather in April and May, we had no right to look for a crop of tree fruits in 1903. And in pears, peaches, cherries and quinces we found a very short crop, but by the wise provision of nature the bloom not opening all at the same time, we had some of the fruits named, and in the north and middle part of District No. 1 we had an enormous crop of apples, of fair quality, which are so far keeping quite well. When not sprayed we had the usual quantity of codling moth. The southern part of District bore practically no apples. Price for early sorts, such as Duchess and Wealthy, was about $1.00 per bushel, and in good demand, but for winter sorts the price, picked, in the orchard, exclusive of barrel, was 90 cents per barrel. The unseasonable high price and scarcity of barrels caused the loss of many winter apples. Pears were almost a total failure, but prices ruled high, even the despised Keiffer selling readily at $1.00 per bushel. The Keiffer, Howell and Louise Bonne producing most fruit. With me the Sheldon blighted most.

Cherries and quinces very light crops, but brought good prices. Quinces selling readily at $2.00 per bushel and keeping market bare at that price.

The peach crop was very uneven and on the whole a very light one. Quality fine. The Elbertas and Barnards were exceptionally good. Prices ruled very high, the best bringing $2.50 per bushel.

Plums produced good crops and well-grown fruit brought fair prices. Oriental varieties blooming early were caught in the freeze. Late bloomers, as Yellow Egg, Reine Claude and Fellenberg, were not overloaded last year, produced small crops. Early spring being so very wet, we were unable to spray and jar as thoroughly as we wished, resulting in more curculio and rot than usual. Varieties most subject to rot are all oriental varieties (except Abundance), also Pond's Seedling, Shippers' Pride, Genii, Fellenberg, and Yellow Egg. All sorts of yellow color can be more easily kept free from rot by going over the trees and removing all rotted specimens. For late spraying copper carbonate has given us satisfactory results. Profitable shipping sorts have been Yellow Egg, Reine Claude and Genii, while Pond's Seedling has always commanded good prices. Like the Fellenberg the tree does not yield the quantity of fruit it indicates. For home market Beauty of Naples and Reine Claude have been our money makers, both being good croppers and good quality. Reine Claude, coming late, makes it desirable. Beauty of Naples has the bad habit of being green and hard as a bone one day and inside the next twenty-four hours becoming soft and falling from the tree; therefore the trees of this sort must be picked over each day. We have had plums too late to be profitable; this year about the time of such sorts as Monarch, Grand Duke and Arch Duke the demand for plums ceased. No doubt but that the demand for plums is growing less each year. Green fruit destroys both the market and appetite of the public. Commission men desire them green. A few years since I made a shipment of ripe plums against the commission man's wishes. They have been having calls for the same variety ever since. They were Lombards only. Strawberries of most kinds gave a good crop, the weather being cool with occasional showers was favorable to the ripening and lengthening of the season. Prices were good. Raspberries only a fair crop, King being most profitable with growers. Currants were a good crop, with few worms. Grapes, on account of rot, produced sparingly when not sprayed; prices ruled higher than for several years. Potatoes were very promising early in the season, the cool weather and occasional showers being very favorable for them. Early varieties yielded well, but the late blight damaged the late planted.

No new fruits have been brought to my notice, nor has any new outbreak of San Jose scale. The serious outbreak at Bowling Green appears no nearer under control than when first found about two years since. In the northern part of District No. 1 the twig blight of the apple trees appeared so bad that should the owner attempt to remove the blighted parts half of the smaller limbs must be removed. The southern part of the district was less badly affected. Every thing considered, the year has been very satisfactory.

C. C. STERLING.

President Miller: We will hear the report from the second district. Mr. Freeman is absent.

The next in order is the report from the third district:

Ad Interim Report of the Third District.

BY A. SHIRER.

The season was rather peculiar and produced somewhat paradoxical results. However, if the searchlight of investigation is turned on perhaps we may be able to discover the causes of some of the effects.

Few days prior to our last annual meeting, we had a heavy sleet, followed by a warm rain. From thence we had a very moderate winter until the fore part of February, when we had an unusually heavy sleet and the mercury ranging from five to ten degrees below zero. The ice adhered to the trees a whole week and had daily bright sunshine. It may remain a speculative theory why a temperature of five degrees below zero practically killed all the peaches as well as both sweet and sour cherries. From this sleety period we again had a stretch of ordinary weather until the beginning of May, when frost after frost occurred, and finally culminated in a regular air frost freeze. Not only were the ground and low plants covered with ice, but also the foliage of the whole trees were literally covered with frozen vapor. It was a genuine winter air frost and had no respect for favored elevations. This May freeze on both highland and lowland did great damage to apples, pears and plums, and in some localities totally destroyed the grape crop and severely injured the raspberries and currants.

SMALL FRUITS.

Strawberry patches that were in a good condition, *that is, that had sufficient reserved force*, produced a fair crop in spite of the repeated killing of the early blooms by frost.

Black raspberries are on the decline on account of the unhealthy conditions of the plants. Red and purple are in better condition.

Blackberries a good yield where they had sufficient moisture to ripen crop.

Currants again a partial crop. There is, however, something radically wrong with many of the patches producing annually entirely too many new shoots. No unusual thing to find twenty-five or more new canes in a single hill. This tendency to produce new shoots is on the increase.

VARIETIES.

It is becoming more and more apparent that individual growers have their own particular pets. The demand, however, for our local market is for a firm, well-shaped, medium size, dark colored, subacid strawberry.

Moore's Early, Worden and Concord are still the leading commercial grapes. There is a limited demand for good white and red varieties. The Brighton is one of the best red sorts when fully ripe, provided they are protected from the birds. They are tender skinned and the birds play havoc with them. The vine is also somewhat tender. Ours were severely injured by the May freeze.

NEW VARIETIES.

John F. Beaver, the veteran amateur strawberry grower, although seventy-seven year old, is engaged as actively as ever in the propagation of seedling strawberries. The past season he again had some of rare merit.

ROCKY PEACH.

Joseph W. Rocky, of Miamisburg, Montgomery County, has a seedling peach of rare value. Free stone, yellow flesh and juicy. The keeping quality of this peach is wonderful. There were some on exhibit at our December horticultural meeting that were simply kept in an ordinary dwelling house without any effort being made to preserve them.

OPALESCENT APPLE.

A very large, well proportioned red apple. This apple was also exhibited at our December meeting by W. J. McNary.

INSECTS.

No unusual outbreak of insects. Those who pursue annually persistent spraying have the canker worms under control. Pickle and melon growers again lost thousands of dollars on account of the little mischievous plant louse. Some who only had a dozen or so plants claim they controlled them by spraying with Bordeaux mixture.

FUNGOUS DISEASES

Among fruits and vegetables again performed their usual pranks, selecting their victims here and there. It is still an open question whether in some localities spraying with Bordeaux mixture is an actual preventive.

MARKET GARDENER.

The market gardener had his brilliant successes as well as his dismal failures. The average temperature during many nights, and sometimes for a whole week in succession, was too low for many vegetables. Also the distribution of rainfall was very uneven.

THOROUGH PREPARATION AND CULTIVATION.

All along the lines both in small fruits and vegetables those soils which were in a good mechanical and physical condition and which were given thorough cultivation were the soils that produced good crops.

PRICES.

The prices as a whole on both fruits and vegetables were very satisfactory. Still some of us have to strain our mathematical bump to its utmost limit to demonstrate beyond a doubt that we realized six per cent. on the actual investment.

PROSPECTS.

The prospect for the coming year is fair, except some strawberry patches, owing to the drouth, are below par.

LOCAL SOCIETIES.

There are three active Horticultural Societies—Montgomery, Greene and Warren—and about half a dozen extinct ones. Perhaps a post-mortem examination might reveal the fact why they died.

CLERMONT COUNTY.

I received the following report from Clermant County:

Strawberries were not injured in general by being winter killed whether mulched or not. The warm weather of the last half of March and first of April forced the buds and when the frost came many of the buds of the early blooming kind were killed. For a time the dry weather in early May threatened to cut the yield, but the later rains made it possible for the yield per acre to be much above the average, as was the price.

Raspberries, though promising in the early part of the season, failed to give more than two-thirds of a crop. The reds sold at fair prices, but the black caps were generally unprofitable. Many plantations were seriously injured by the blight.

Cherries were a fourth crop. The Early Richmond, among the sour, the most profitable.

Grapes were not a full crop, yet some varieties, as the Catawba, never did better.

Peaches were generally absolutely winter killed, but an occasional tree of a variety very hardy in the bud on a firss-class site, produced peaches of a superior quality for the variety, and brought abnormally high prices in the home and Cincinnati markets.

Quinces were a full crop of a high quality and brought remunerative prices.

Plums of the Damson type were abundant. Others, whether of the American or European origin, were badly injured by the late frost.

Pears were a fourth crop and generally under in size and of poor quality. Keiffer ripened prematurely, but for the most part were highly colored.

Apples a third crop. Possibly not over a fourth of early varieties.

The early blooming varieties, whether summer, fall or winter, were badly hurt by the late frosts.

The yield of orchards that were sprayed last year and again in 1903 was normal, but as a rule fall and winter apples ripened prematurely and are not keeping, and are put on the market in bulk as well as in packages, and have a depressing effect on prices. Ben Davis is still the leading commercial variety.

LOWELL ROUDENBUSH.

Nicholsville, Nov. 9, 1903.

UNIFORM PACKAGES.

It is one thing to raise a crop and quite another task to dispose of it profitably. Those who sell directly to the consumer may carry on a profitable trade for the time being by selling three pecks for a bushel. But when the products of the different growers come in competition at the commission house or on the public market, then the shape and size of the package may either mean profit or loss. One thing is certain, if there is any doubt about the size of the package the retailer will take advantage of said doubt.

Commission men, retailers and manufacturers of packages are anxiously waiting for a uniform package law. A commission merchant recently told me that he must know the custom of the city from whence he orders his sweet potatoes. From one eastern city he gets barrels containing three bushels, from another barrels that contain only two and one-half bushels.

The retailer, when he orders a bushel of apples or peaches, does not know whether the package contains the legal weight or simply what can be conveniently placed in a box or basket that contains the number of cubic inches that will contain a bushel of wheat.

Perhaps our Legislature was not wise when it decided that it takes a little over five pecks to make a bushel of apples, peaches, etc. These extra pecks are the cause of the trouble. Even some authors of arithmetics forget that four pecks do not make an horticultural bushel.

One of two things should be done, either the package that contains the legal number of cubic inches should be a bushel for all products, or else have an iron clad law preventing the manufacturing of any packages that will not contain the number of cubic inches required to hold a legal bushel by weight. No more difficult to put such a law into execution than for each city to have an inspector of weights and measures and compel every dealer to have said weights and measures sealed. It does seem to me that we have arrived at the period when Ohio, Indiana and Michigan should appoint a joint committee and agitate this question until we have uniform packages.

This question is becoming daily more important since the bulk of business is done by telephone.

There is another reason why we should have uniform packages through the whole United States. We sometimes try to compare our successes and failures with the results of others. But how can we compare when a barrel, basket or crate in one section is not equal to a barrel, basket or crate in another section?

There is another question that the State Horticultural Societies should take more interest in—a uniform prescription for preparing spraying materials. One experiment station gives us a certain formula and perhaps the adjoining state gives us one that varies considerably. In our horticulture literature we find too many indefinite expressions which become a regular stumbling block, especially to the beginner. One example will illustrate this point. "Do not prune when the wood is frozen." Will some one, during this session, tell us at what temperature we shall not prune, instead of when the wood is frozen?

There are sufficient natural thorns and briars in the path of the practical horticulturist; let us therefore attempt to remove all the stumbling blocks while he is making all honorable efforts to reach the hill of fame.

President Miller: You must feel free to discuss the topics at any time as we go along.

Professor W. R. Lazenby: Mr. Shirer referred to the legal weight of apples; I would like to ask what that is per bushel.

President Miller: Fifty pounds in Ohio.

Mr. Pierce: I am afraid passing a law on this subject of uniformity will not help matters much. There is a law on the statute books that a package shall not be used twice, but I should judge from the boxes that come on the Akron market that they have been used twenty or thirty times. About two months this law was observed, perhaps not more than four weeks, and then the old packages began to be used again, and it is the same with all laws. It is very difficult to enforce them unless there is the moral courage among the producers to live up to it. It makes considerable difficulty; more so in apples by the barrel than any other way, but since the barrels are so high we have to use something else and the packages will be more uniform.

Mr. R. A. Hunt: In buying apples there are usually so many poor ones thrown in that the buyers have to have a few pounds extra to make them come out even.

Mr. H. H. Aultfather: It seems to me that I would buy by the pound—buy by the hundred pounds. But it seems that some of the dealers take advantage. We have two grades of apples; we want fifty cents a bushel for our fine apples, when we are glad to sell our poor ones for less—we will take a quarter. Many of our dealers buy them, do the mixing, and blame the farmer.

Mr. C. W. Montgomery: Mr. Shirer referred to an horticultural bushel containing five pecks, and I ask whether he means it is because the horticultural bushel is required to be heaped while the agricultural bushel is required to be stroked.

Mr. Shirer: Yes. May I add that it is not buying by weight that will settle all the trouble? Buying by weight is a little like selling milk. The Dairy and Food Commissioner told me on Monday he found several herds of cattle in Ohio giving milk that does not come up to the standard of Ohio, and the most peculiar thing of all is he said that one of the eastern supreme courts decided that it didn't make any difference whether the cow put the water in the milk, or whether the dairyman was responsible for its not coming up to the standard.

But the point I want to get at is this: When a package pretends to be a quart, let it be a quart; if it is a bushel, let it be a bushel and hold a bushel by weight of an ordinary crop.

Why couldn't we have a state inspector? And then if anybody wants to to manufacture packages, let them notify him he is going in that business; let the inspector go there and see what he makes, and if it is not the size that contains the number of cubic inches it should contain, let it be condemned on the spot, and that will end the whole business.

President Miller: I came in contact this morning with a manufacturer, and I am sure we would like to hear a few words from him.

Mr. Wise, of Barnesville: We make packages and we make three sizes, that is, for quarts; and it is the same on all lines. We make two sizes for halves, two sizes for pecks, and two sizes for gallons, and we do it because the trade demands it.

Mr. Shirer: Would you rather have just one size than all these different sizes?

Mr. Wise: Yes; if we just made one size and everybody used the same, it would enable us to always have stock on hand of the right size, but when there are so many different sizes in different localities in the same state we hardly know what we do need.

President Miller: Is Mr. Persing present? If not we will pass that and take up the fifth district, Mr. W. R. Lawrence, of Marion.

Ad Interim Report of Fifth District.

BY W. R. LAWRENCE.

Mr. President and Members of the Ohio State Horticultural Society:

The season of 1903 has been a fairly prosperous one, all things considered. to the Horticulturists of Central Ohio. The spring opened early, with all trees and plants in the best of condition, promising a large crop of all kinds of fruit, until the frost and drouth used them so roughly that the bright prospects were somewhat changed. The frost was very destructive in our fruit plantations, destroying fully 50 per cent. of all bloom, while the drouth, although seemingly not doing as much damage, will be felt by us for a year to come, because of the poor stand and growth of all spring set plants, where ground did not get prepared properly.

The strawberry crop was light, being only about one-half of a full crop, and rather inferior in size and quality. The price, however, was all right, as we averaged $1.95 per bushel for over 1,000 bushels, against $2.42 per bushel in 1902, and $1.40 in 1901.

In the last fifteen years we have experimented with over one hundred different varieties of strawberries, and have not been able to find more than a dozen that we consider worthy of further cultivation for commercial purposes.

I will give them in the order in which they are held by us as money makers: Haverland, Crescent, Bubach, Warfield, Bedor-Wood, Sample, Johnson's Early, Senator Dunlap, Clyde and Wm. Belt. The first half of this list are all old varieties, but one "hard to down." The remaining ones are of later origin, but we believe will be known for years to come. Sample leads with us, among the newer berries. It ripens its fruit over a long period, from medium to late, and has size, color, good keeping qualities, and fine appearance in package, which places it in the fancy class.

Johnson's Early is our best "all around" early berry. In addition to its earliness, it has size and firmness, and is one of the best of pollenizers. I believe it will be an excellent fertilizer, for the medium and late berries, as well as the early, as its blooming period is quite lengthy.

Senator Dunlap is a berry of the Warfield type and I believe will supersede that old stand-by, it having a perfect flower, is a better drouth resister, is larger, and is an excellent canner.

Clyde has more berries to the plant, than any strawberry we ever grew, but is so soft with us, that if not used the same day as gathered, it is worthless; the color is also poor ana even when fresh, is always placed with the second grade berries.

Wm. Belt is a fine appearing berry, after the first picking, which is very rough. It has a perfect flower, is a good yielder, a good shipper, but the foliage rusts badly at times, if not thoroughly sprayed.

Raspberries were a full crop, except the Palmer, and brought good prices, our average for the black-cap being $2.40 per bushel; against $3.40 in 1902, and $2.56 in 1901. The reds brought $4. The most prolific black-cap was the Eureka, with the Gregg a close second. The Gregg, however, bore a good crop last year, while all the other kinds took a rest. Louden and Cuthberts are the leaders among the reds.

Blacberries were about one-half of a full crop, with an average price of $2.56 per bushel, against $2.75 in 1902, and $2.56 in 1901. Snyder is the only kind that does well with us.

Currants were a good crop, and brought from $1.75 to $2.25 per bushel. North Star, Red Cross, and Red Dutch are the leaders.

Gooseberries, almost a failure. The few what were placed on the market brought about $2 per bushel.

Grapes were a full crop, where properly cultivated and sprayed, and brought from five cents per pound in baskets, to $30 per ton in bulk. Our Worden, Concord, Niagara and Delaware vines were all loaded, and free from disease, except a few Niagara, on which the grapes rotted badly last year, and were slightly affected this season.

Cherries promised to be something great in early spring, but when Jack Frost got in his work there were only about one-fourth of a crop left. Then, "sad to tell," Mr. Robin claimed his share, so that we had but very few left; these sold readily at from $3.20 to $4 per bushel.

Plums were rather scarce except the Lombard, which were a good crop and fine; the average price was about $1.25 per bushel.

Peaches were very poor, no home-grown ones being found on the market except a few Early Triumphs; they brought about $2.50 per bushel.

Pears were like the peaches, "few and far between." Keiffer was the most plentiful and sold for about $1.00 per bushel.

Apples were about 50 per cent. of a full crop, and are keeping well, where the orchards were cared for; that is, cultivated or mulched and sprayed. The most prolific with us were the Duchess of Oldenberg, Fameuse, Wealthy, Stark, Pewaukee, Mann and Ben Davis. The sales so far have ranged from 25 to 75 cents per bushel, but several large growers are now holding for $1.00 or more. Central Ohio has never been noted as an apple growing country, but Mr. Vergon, of this place, has demonstrated to us that no better apple can be grown anywhere than here, if the site is carefully selected and up-to-date methods used in the management of the orchard.

Black Knot has been very destructive in the Damson Plum orchards. After fighting it until almost all branches were cut away we up-rooted what remained of the balance of the trees, and replaced them with the Lombard. We have also had a running fight with insects and disease in a four-year-old cherry orchard of about 200 trees. First, the pin hole borers commenced, and killed fifteen of the best trees and injured several others, then a blight struck the orchard, one night, and burnt about one-half of the leaves from a couple of dozen trees, and again about the last of August all trees in that orchard were prematurely defoliaged. This orchard was plowed twice with a barshare plow, sprayed three times with half strength Bordeaux mixture and arsenate of lead, and the bodies of the trees were coated with a wash of lime, salt and arsenate of lead. Another pest we have had to contend with is the white grub worm. Acres of early potatoes were destroyed with it, and many late ones injured badly, besides other farm crops being destroyed in places. Our worst loss, from its work, was a new six-acre plantation of strawberries. We dug out grubs all summer long, whenever plants were hoed, and now have only about enough plants left for a two-acre patch, thinly set.

President Miller: Any discussion upon the report?

I would lie to ask Mr. Lawrence in regard to the spraying of those cherries. Do I understand you to say they were sprayed three times?

Mr. Lawrence: Yes, sir; but it was pretty early in the season. I think if I had sprayed a couple more times I could have saved that part. I have in other years. A year before I sprayed later in the season and the leaves did not drop. But this disease spread and came from the plum orchard. The disease seemed to sweep through the cherries. By the last of August every leaf was off of those trees, and they never started again.

Question: Shot hole fungus?

Mr. Lawrence: Shot hole fungus—or pin hole; I believe Professor Lazenby said pin hole; did you not?

Professor Lazenby: I think both terms are used.

Mr. Lawrence: I know I made inquiries at the Station and I went home and used lime and arsenate of lead and I put salt in to harden the arsenate of lead. I don't know what good that did; I can tell better in the spring.

President Miller: The next report will be from the sixth district, Mr. R. L. Renshaw.

Ad-Interim Report of Sixth District.

BY R. L. RENSHAW.

From the Horticulturist's standpoint the season of 1903 has not been strewn with roses. Early in the season an abundance of all kinds of fruit was promised; plants of the small fruits came to full maturity—strong, vigorous and healthy, with a good stand of plants; tree fruits ripened their wood and set an abundance of fruit buds; everything seemed just right, but, alas! the weather clerk took it unto himself to make trouble, and to say that he succeeded would be putting it mildly indeed. On February 14th there was .12 of an inch of rain which froze into sleet as it fell; on the 15th there was 1.45 inches, and on the 16th there was .65 inch, all freezing as it fell, covering everything with a mantle of ice an inch thick. It was a weirdly beautiful picture seen but a few times in a lifetime; buildings, fences, trees, everything covered by a silver coating that was beautiful beyond description. Trees, tall and stately, bowed their heads in humble submission to the fury of the great ice king. Great damage was wrought fruit, forest and ornamental trees, and once beautiful specimes were rendered to unsightly snags. On the 17th the clouds cleared away and the sun shone out, and such a picture! There were castles, palaces—all sorts of fanciful creations—a real silvery landscape, bright, sparkling, more beautiful than pen can picture. The mercury dropped suddenly from 31 degrees to 1 degree. On the 18th 2 degrees was recorded, and on the morning of the 19th the thermometer showed 10 degrees. All sorts of speculation followed as to the effects on the fruit buds; some argued the ice would protect, others that no live buds would survive, and the latter class proved to be correct, or practically so, as peaches and tender varieties of cherries were about all killed. There were a few seedling peaches in sheltered localities. The writer had a few extra choice Elbertas and Crosbys. The Boys' Industrial School, with an altitude of about 1,000 feet above sea level, reported a few peaches. Strawberries that were well mulched wintered well and gave promise of a large crop, but almost freezing weather from blooming to ripening time blasted the hopes of nearly all growers. On May 4th the temperature fell to 32 degrees; the ground was frozen and it seemed as though nothing could live through such weather, yet on May 23rd we picked 24 quarts of Michels Early and Excelsior. The crop, however, was generally poor both in quality and quantity. A large per cent. of the crop was very knotty and imperfect. Prices ruled high throughout the season, $2 to $4 per bushel; extra fancy bringing as high as $6.40 per bushel. Black raspberries were a good crop and sold at an average of $3 per bushel. Red raspberries were a large crop on young and healthy plantations and brought fancy prices, $4 per bushel at retail. Anthracnose has become so prevalent in my section that the culture of raspberries seems doomed. Blackberries were a large crop, but the quality was poor owing to frost and drouth towards the close of season; prices ruled at about $2.00 per bushel for the cultivated varieties and 80 cents to $1.00 per bushel for the wild berries. Varieties that pay best in my section are Erie, Eldorado and Minnewaski. Few dewberries are grown, mostly "Lucretia." There was an almost entire failure in currants and gooseberries (owing to frost in blooming time). What did mature brought 12½ cents per quart. Grapes were a fairly good crop, but are not grown commercially to any extent. I can only remember of one commercial vineyard, that of John S. Snider, lately deceased, an honorary member of this society. His plantation consists of 80 acres, chiefly Ives. The Boys' Industrial School cultivates several acres for home consumption. Plums were a variable crop, some varieties producing abundantly, such as Lombard and Green Gage, while others were an entire failure. Pears were scarce, even the old reliable and much abused Keiffer refused to yield a crop with such weather conditions.

Apples, the prince of all the fruit creation, was a variable crop. In some localities there was a heavy setting of fruit and where spraying was thoroughly done a fine crop of fruit was harvested and brought good prices, an average of $2.00 per barrel. Some very choice apples were exhibited at the Lancaster, O., fair by Mr. Chas. Ochs and John Hoffman, both members of this society and both ardent champions of the spray pump. Mr. Ochs is so enthusiastic over his success that he will plant 1,000 trees of winter apples in the spring.

Truck farming is quite an industry in my section and is generally profitable. The forcing house industry is in its infancy as yet, my good friend, Mr. M. Miessee, being the only one in my immediate section engaged in this lucrative business.

President Miller. We will have the report from the second district, Mr. Freeman:

Ad Interim Report from Second District.

BY ISAAC FREEMAN.

Mr. President: The flight of time has brought us to the close of another year's work. We meet again to talk over our successes and failures, hoping to be able to gain some information to take back home to our friends, that will give them some new light in the dark mystery of horticulture.

It has been impossible to get such information from the counties composing the Second District, that I should like to present to this society. By writing many letters, I have reports from most of the counties in my district, which I will give in part as I received them.

There is but one Horticultural Society in the Second District. That was organized in Miami County in May, 1882.

The Second District was visited by a severe frost the first week in May, that destroyed most of the pear, plum, peach, cherry and grape bloom, and most of the apples on low bottom lands.

So there is not over 50 per cent of an average crop of apples. They have been seling at 50 to 75 cents per bushel, except the yellow transparent, which brought $1.20 to $1.50 per bushel, in the latter part of June and first part of

July. The first blossoms on the strawberries were killed by frost. The weather turned warm and the genial showers of rain soon brought forth a fine crop of bloom and an average crop of fine fruit was the result.

Mr. W. B.Fulton, of Kirkwood, Shelby County, in his report says, in September and October he picked $30 worth of fine strawberries, mainly Haverland, Clyde Johnson and Lovette. Senator Dunlap made a good yield. Mr. Fulton gives seven best varieties to plant: Clyde, Johnson, Lovette, Haverland, Bubach, Ridgeway and Dunlap; of raspberries, Cuthbert and Miller's Red; of blackberries, Taylor and Snyder, also Eldorado. Mr. Fulton reports two cases of San Jose scale in Shelby County. Both about stamped out. Apples to plant in Shelby County: Ben Davis, Baldwin, Wealthy, N. Spy, Rambo, M. Blush, R. I. Greening.

W. J. Mathews, of Ada, Hardin County, O., reports no scale in their section. Apples, 75 per cent. of an average crop, brings in market 75 cents per bushel. Varieties in their orchards: Baldwin, Ben Davis, Northern Spy, Rambo, Wealthy, Maiden's Blush, R. I. Greening and Jonathan. Pears, 50 per cent. of a crop; varieties, Bartlett, Clapp's Favorite and Keiffer. Cherries, E. Richmond.

Mr. E. M. Buechly, of Greenville, Darke County, O., reports no new outbreak of scale in Darke County. Apple crop good. Strawberry crop an average one of fine quality, selling at good prices; Clyde holding first place as a fertilizer; Carrie, Haverland, Greenville, Bubach in the lead as pistillates. Leading apples in Darke County: Yellow Transparent, Maiden's Blush, Wealthy, Grimes Golden, Rome Beauty, York Imperial, and Stark. Pears about a failure in Darke County. Tyson, one of the best; Bartlett, Keiffer, Clapp's Favorite, Flemish Beauty. Cherries for Darke County: E. Richmond, English Morello and Montmorency. Plums: Lombard, Damson, Shippers' Pride, Moore's Arctic, Bradshaw, Burbank and Abundance. Peaches: Champion, Elberta, Crosby, Old Mixon free, New Prolific and E. Crawford.

Mr. E. R. Humes, of Urbana, Champaign County, says apple crop a good one, of fine quality. Varieties in their orchards: Rome B., N. Spy, Ben Davis, Rambo, Greening and Maiden's Blush. Canker worms very bad, but easy to control if sprayed.

The apple crop in Miami County is not over fifty per cent of an average crop, selling at 40 to 75 cents per bushel during the season, except the Yellow Transparent. They brought from $1.20 to $1.50 per bushel. Pears, plums, peaches and grapes mostly destroyed by frost. Cherries 1-6 of a crop, selling at $4 per bushel. Varieties: E. Richmond, Late Duke and Montmorency. The scab or bitter-rot on the apple has been the hardest enemy to fight this year. Varieties most affected: Rome B., White Pippin and Mo. Pippin.

I recommend a list of the most profitable apples to plant in the Second District: Early—Yellow Transparent, Duchess. Fall—Maiden's Blush, Rambo, Wealthy and Jeffries. Winter—Park's Spice, Jonathan, Minkler, Rome Beauty, Ben Davis, Grimes' Golden, York Imperial.

Testing of Russian Varieties.

BY ISAAC FREEMAN.

Eighteen years ago L. J. Budd, of Des Moines, Iowa, was sent as a U. S. Commissioner to Russia to select a hardy class of fruit for the Northwestern States. On his return home he offered to supply anyone desiring to test any of his selections at $10 per 100. The trees were grafted and had been bedded one year. They were 12 to 20 inches long. I ordered 80 apples, 20 varieties; 10 cherry and 10 pears. I planted the young trees in nursery rows. After three years' growth 1 set them out in orchard. After testing the pears, in bearing, not one of them were worthy a place by the side of our home varieties. One variety of the cherry, the Ostheim, a late kind, was good enough to propagate. Four varieties of the apple out of twenty kinds are equal to our vest varieties; three kinds ripening in August and September; one variety of white apple, medium in size, excellent in quality to cook or eat; two varieties, red, resembling Duchess of Oldenburg, but larger, equally as good, but one variety carried into winter. This variety I brought with me for your committee to test. It seems to possess the essentials of a good variety.

Mr. Hyde: Our experience with the Shippers' Pride is that it is almost worthless in northern Ohio. This year where every other variety was well loaded and made a profitable crop, I got off of seventy-five trees of the Shippers' Pride about four bushels, but it may do better in southern Ohio and western Ohio.

Mr. Shirer: I would ask Mr. Freeman whether the Yellow Transparent has to be picked before it is fully ripened on account of preventing decaying at the core.

Mr. Freeman: I will give a little further description of the Yellow Transparent, because I think it is one of the best early varieties for profit that we have. The seventeenth of June I picked the main part of my apples, finishing on the fourth day of July. On a number of trees a portion were left, as they were somewhat green. And I was astonished when I visited the trees and found that those smaller green apples had grown to be as large as the largest I picked before. I came to the conclusion that to handle the Yellow Transparent with success they should be picked as they ripen.

Question: Does the Yellow Transparent blight?

Mr. Freeman: I had a little blight on the end, but not equal to some of the other varieties.

Mr. Farnsworth: I think that is something we overlook with all of the early apples. I find that our early varieties need to be picked five or six times. It makes a little extra labor and bother, but we get more quality and better appearance.

President: We will have the report from the seventh district, Mr. R. A. Hunt, of Euclid.

Ad Interim Report from Seventh District.

BY R. A. HUNT.

Mr. Chairman and Friends in Horticulture:

It falls on me at this session to report the condition of the fruit crop in the Seventh District—failure, success, the cause, and also matters of interest to horticulturists. My report will be mostly in regard to the varieties that come to the Cleveland market, varieties that have a demand, the source of the demand, etc.

In all large cities there are three classes of buyers—those who take the poor fruit at a low price, the medium grade at a medium price, the fancy at a fancy price. Well it is so, for we as horticulturists may do our level best and then have plenty of poor fruit, for we have to contend with insects of all descriptions, something new in that line every few years; or the old ones that have done but very little damage in former years become so numerous as to destroy a crop and also the trees in a short time.

STRAWBERRIES.

The past season turned out to be an ideal one to most of the growers near Cleveland who practice mulching, although the frost nipped some of the early blossoms. The weather was moist and cool, giving the berries a chance to develop to a large size even to the last picking. They were not as sweet as in warm and shining weather, but the grower's disposition was sweetened by taking home a good price for his labors. Varieties mostly planted for home market: Bubach, Belt, Marshall, Nick Ohmer, Warfield and Gandy.

The commission men say the Gandy gives the best satisfaction of any that they handle, selling from 10 to 14 cents per quart to the retailers; they also speak well of the Warfield. In driving distance of the city the bulk of the crop goes into two-quart baskets, some of the growers picking over 1,000 baskets in one day. At the height of the season they brought 20 to 29 cents per basket.

Black Caps, a good yield, good prices, $6 to $7 per stand of two bushels.

Blackberries, both wild and cultivated varieties, a bountiful crop, prices good. The larger the berry, larger the price.

Cherries, both sweet and sour, light crop on account of the frost and cold.

The same as to currants, and the good housewife lost her jelly.

Plums along the lake shore the finest for years. Back from the influence of Lake Erie very light crop.

My own experience proves beyond a doubt that spraying was very beneficial, especially where I used Disparene and also molasses.

The frost caught all the early blooming varieties; in fact, all the Japanese and nearly all the bloom on the Mary and Rene Claude which showed bloom only a few days later than the Japs.

The curculio made his appearance in great numbers and kept us busy for about a week. Then came several days of cold weather which evidently the Turk could not stand and he disappeared entirely. The plums grew to one-quarter to one-third their natural size. The stem would separate from the fruit and the ground would be covered and it looked as though our crop was doomed, especially the Shippers' Pride, Italian and German prunes. But it thinned them out just about right. This peculiar disease, or I presume it was caused by the cold weather, did not affect the light colored varieties to any extent and I am pleased to say that our crop of 3,935 baskets averaged 26¼ cents per basket (5 baskets per bushel). The Italian prunes bringing the highest price, 40 cents per basket. The demand is better for dark colored varieties than light.

PEACHES.

Some orchards in my district were full, but the majority had scarcely any. My own small orchard was set three years ago on the poorest yellow clay in the county. No one to my nowledge ever tried to grow peaches on such soil.

For commercial purposes I was very much surprised at the result: Sales: 40 Elberta trees—200 baskets, $120; 60 Salway trees—296 baskets, $200.70; total, $320.70.

I wish to state here one reason of my success is due to what I carried home from the Horticultural meeting at Clyde last December. It was Brother Freeman's experience in thinning Keiffer pears. I applied it to peaches, a much better fruit. I feel that my time and expenses were amply paid. Most of the fruit growers knows that thinning pays, but we need a reminder occasionally.

Peaches ranged in price for shipped stock $1.25 to $1.75 per bushel basket. after; and thinning helps us get it and it pleases the eye of the fastidious cus-For a double A, $1.75 to $2.25. Home grown, all handled, in smaller packages, 30 to 60 cents, for quarters; 60 cents to $1.25 for halves, as to quality. One great drawback to peaches this season they lacked color. The same variety and size highly colored adds 75 cents to $1.00 per bushel more, and that is what we are tomer and makes quick sales.

Varieties: Graves Early, good size and very fine color, extra quality and attractive. All Know the Elberta. The name sells it. I have seen Californias sold under the name of Elberta. They did not sell till Elberta was placed over them. Salway, not extra for quality, comes so late they all want them. Bees Smock, a good late peach, just ahead of Salway in ripening.

The three predominating varieties are Elberta, Smock and Salway. There are scores of other good varieties, as you all now.

Pears throughout the Seventh, unusually light. Late frost was the chief cause. One block of Keiffers, 50 acres, not a bushel, and our market did not have the usual supply, but prices were low, 20 to 25 cents per ½-bushel basket; late in the season, choice stock, 35 to 40 cents. They are a paying crop at 50 cents per bushel. As I said, there was a demand for all grades. What is the source of the demand for the bulk of the Keiffers? I will only answer for the Seventh District.

As I handle several thousand bushels of pears each season and have bought Keiffers by the carload, I am in a position to know something of the demand.

I do not cry down the Keiffer, for it is better than several other varieties that I could name, but are not grown to any great extent. It goes to the cheap trade. A few may still claim it is of superior quality. The masses say "No." It has no place in the first-class grocery store and is also discarded at the canning factory when other varieties are plentiful.

Trees blighted badly; more body blight than twig blight. I am trying all sorts of remedies and the only one I could recommend is to help your brother nurserymen by setting out more trees. Three years ago I had a block of 200 very fine Dwarf Duchess. They looked like a row of soldiers, none missing and all ready for duty. In the spring I found about one dozen badly blighted on the body. We dug them out and I supposed we had done a clean job. On looking them over in June I found we had missed two. One was the end tree in the row, the other the second tree in next row. I took my knife and cut the bark all around the tree from the ground to the branches, leaving a strip perhaps one-half inch wide uncut. My intention was to so mark the tree that a German working for me would make no mistake and dig up the wrong tree. Fortunately, he forgot it. A few weeks later I was through the orchard and noticed the new bark had started and by fall it was nearly healed over. Today it is as thrifty as any in the row. The other tree died. Since then I have no hesitancy in using the knife. Last July I found nearly every tree more or less affected. I went over them and removed all dead bark, but was careful to leave some of the inner bark. At the time they were heavily loaded with fruit. I have faith that it is the proper thing to do and will report later if not.

VARIETIES.

Bartlett is still the standard from ocean to ocean. More grown than all other varieties put together. Seckel never has exceeded the demand. Anjou, one of the best that I handle for early winter. Then comes Lawrence. These are the leading varieties, with the Duchess, which was the best cropper this season, and a salable pear when well ripened and not too large.

The grape industry in northern Ohio which has been at low ebb for a number of years on account of overproduction, high price of labor and vineyards sadly neglected, is gradually regaining its former place as a profitable fruit to grow. The Concord a few years ago sold from $15 to $20 per ton, has increased to $35 and $40; Catawbas $60 to $65. Concord for dark, Niagara for white, Catawba for red, are the three that have the greatest demand. Worden and Delaware are also standard varieties.

THE APPLE

The king of the tree fruits. They flourish from Main to California. Most orchards sadly neglected in my district. I should say about 70 per cent. of a full crop. No demand at present for picked fruit, except fancy stock. The windfalls and common stock not all used up. We wise ones underestimated the crop. W. I. Chamberlain estimated his own crop at 10 bushels per bearing tree. I put it at 20. Results show that thirty was nearer correct and that seems to be the condition throughout the country. Growers who held for higher prices are now looking for purchasers. Prices at picking time radiated a few cents above and below 50 cents per bushel for the bulk of the apples sold at that time. Today 40 cents will buy all you want. Greenings, Spys and Baldwins are the ones that are called for the most in our market for culinary purposes. There is a great demand for Belmonts and Snows put up in small packages and bring fancy prices for table varieties. The Rome Beauty, grown in northern Ohio, is a better keeper than the Baldwin, and a good, all around apple. How about the Ben Davis? The same trade that calls for the Keiffer takes the Ben Davis. Our storekeepers will not handle it unless there is a shortage of the other varieties. There is a limited call for them in late spring after the other varieties are out of the market. There is a good opening for orchardists who will turn their attention to growing the fancy table varieties. They will command double the price of the general market sorts and a ready sale, as the market is never overstocked.

Mr. Chairman: I realize that I have taken up more time of this society than I should. I wish to say a few words in regard to spraying, if you grant me the time.

To be brief as possible, an acquaintance of mine, who had 4 acres in vineyard which had rotted badly for several years, rented to a neighbor who had a sprayer, but reserved three rows for his own use. Results show a fine crop where sprayed and nothing but trash on the three rows that remained unsprayed. The grapes in that section rotted badly except the sprayed vineyards. One more case that came under my observation; a thirty acre vineyard which for several years past had been unprofitable on account of the rot. The cultivation was somewhat neglected. Last year it was rented for $585, had fair cultivation but not sprayed. No packing grapes were harvested. In fact the pickers could not make their wages and the grapes did not amount to one-half of the rent. The past season this vineyard rented for $300. Sprayed seven times. Harvested 14,000 baskets No. 1 packing grapes @ 14c, $1,960. One row not sprayed, all rotted.

What could be more convincing. Results all show that where the Bordeaux was used only four times gave the best results, and that will be the rule followed by those who have given the subject the most careful attention,

(At the close of his report Mr. Hunt holds up and describes three varieties of apples, the Mackintosh Red, the Baxter, and one other, grown near Ogden, New York.)

Question: How does the Mackintosh compare with the Jonathan?

Mr. Hunt: You can not go ahead of the Jonathan much for table variety; it sells high in the market, but this Mackintosh Red is just as good an apple, I think. It is of the same nature.

Question: It is earlier than the Jonathan, is it not?

Mr. Hunt: Yes, sir.

President Miller: The next will be the report from the eighth district, Mr. L. B. Pierce.

Ad Interim Report from Eighth District.

BY L. B. PIERCE.

The weather is something we can talk about and find fault with and cannot control yet it cuts quite a figure in the results of a year's work. The past year it got in its first interference by killing the sweet cherry and peach buds. A few buds were left to bloom but these with most of the plums, the sour cherries and some of the pears were put out of the way by a freeze in May. This frost seriously cripled some varieties of strawberries.

Beder Wood, Nic Ohmer and Haverland suffered the most. There was no glut of any kind of berries and prices were good. Currants were almost an entire failure and this coupled with the loss of the sour cherries caused raspberries and blackberries to be in demand. A very ew homegrown peaches appeared on the Akron market, of two varieties only: Crosby and Lemon Free. These two varieties are unquestionably a little hardier than other kinds. Apples were nearly an average yield although only about half the trees bore. Those that did bear bore heavily of large sized fruit. Buyers for storing or shipping were not plentiful and scarcity of help made gathering much slower and later than usual and most varieties ripened thoroughly on the trees, there being no severe winds after the 8th of September. The summer was cold and wet and all warm blooded vegetables were late and had it not been for a beautiful warm fall there would have been a large amount of garden truck unmatured. There was no killing frost until October 23 and that did not seriously injure the hardier vegetables. I exhibited a box of strawberries ripened out of doors without protection, on the 11th day of November, at the Summit county Horticultural meeting.

I picked strawberries several times a week for the eight weeks previous and some growers sold several bushels. During the last of September they sold at 35 and 40 cents per quart, but in October enough were offered to push the price down to 25 cents. This was at wholesale. Forty-three years ago at the first agricultural fair held in Summit county I showed a saucer of Burr's seedling. Last year at the same fair held about October 1st, strawberries were shown and this year about the same date several boxes of Nic Ohmer and Sen. Dunlap were exhibited. In the autumn crop Nic Ohmer seemed most produc-

tive with Dunlap a close second. Haverland, Enhance, Belle, Beder Wood and Wm. Belt all bore and ripened fine berries with me up to November 10th. A friend who had the Pan American, had berries all through the summer on six plants for which he paid $5. This variety, nowever, makes no runner and it can only be increased by offsets and the propagation cannot therefore be more than four or five fold as against 150 fold of such sorts as Dunlap and Warfield. I got no fall crop of berries on either Bubach or Brandywine and saw no blossoms. Quinces were extremely scarce. Bradshaw and Lombard plumes were the only plums that escaped the May freeze and these were offered on the market in considerable supply. In Akron and Canton in October and November there was a great call for apples to eat out of hand and it is getting to be the fashion to put one or more apples into every dinner pail that goes to school or shop. The high price of bananas helps the apple trade and dealers in tropical fruit complain that cold storage apples are seriously undermining the orange trade. Altogether it may be said that home fruit production in northern Ohio is not keeping pace with demand. The season has produced its full share of diseases, insects, blights and rusts, but those affecting fruits seem more easy to cope with than those affecting vegetables. It was very difficult to produce a full crop of melons, cucumbers and tomatoes owing to mildew and blight. The aphis was a serious pest to cabbage. Early potatoes blighted and this crop is so uncertain that most gardeners are cutting it out. Gardening under glass is increasing, gardeners beginning in a small way and enlarging as they learn.

President Miller: Any discussion upon the report?

Professor Lazenby: I would like to have friend Pierce's opinion as to what the effect of this rather unusual fruiting in the fall will be on the succeeding crop of strawberries?

Mr. Pierce: Well, in my case there were not enough plants bearing to make much difference next year. The weeds were thoroughly cleaned out from the row. Most of the berries grew where the cultivator ran, and perhaps this had something to do with it, as it cut the roots. It would have the same effect as girdling a grape vine.

You looked at the row six or eight feet from you and under the edge of that row were the ripe berries.

Some of these rows I cut over with a hoe; I cut through the middle a strip five inches wide, and then in those rows they began to bear in the outer edges of the row and even in the middle, so I should judge the cultivating right after bearing, and the warm fall produced this effect. It was a peculiar fall that gave us this result. It may be forty years before we have such a crop again.

Mr. Shively: I would like to ask if there wasn't drouth following the first fruiting season of this year?

Mr. Pierce: We had nine inches of rain in one week about the middle of July.

Mr. Shively: The reason I ask is that we had an experience something like that two years ago, when our strawberries fruited in October; we also had raspberries as late as the first week in November. After the fruiting season of this berry it became very dry, remained dry and the buds, being in a dormant state, matured, and then later on a rain set in and continued warm until a late stage; they bloomed, fruited and ripened. We had a great many raspberries put out a new growth.

Professor Waid: I think there will be more or less conjecture in reference to this matter of the second crop and the effect on the next year's crop. We have had, perhaps, more reports of the second crop this year than ever before. We have had reports here today that a large per cent. of the spring crop was killed by frost, and it would naturally follow that these plants would have the strength to force out a crop in the fall, and these two things did occur this year. It seems to me that these two things can naturally be brought together, and it should not have a greater effect on the plants than one good crop.

Mr. Whitney: The thought comes to me as to why the strawberries bore in the fall. We did not have over three days' warm weather until September; the strawberries thought they had been through another winter and when it became warm they started.

Mr. Tussing: We have had great difficulty in the growth of melons and other crops of that kind. We have been unable to do anything to hold the melon louse in check. I think one gentleman in his report recommended spraying with the Bordeaux mixture—at least he spoke of it. I want to say we sprayed regularly for the muskmelon crop and that didn't seem to affect them in the least, and especially last year they did us great injury in our crop of Tip Top melons. If any have been more successful I would like to hear from them.

Mr. Pierce: Kerosene emulsion will kill them, but it is very difficult to get it on them.

Mr. Shirer: I referred to the spraying with Bordeaux mixture; but I doubt its efficiency.

Professor Waid: As has been said, spraying with whale oil soap, or something of that kind, might have some effect. I don't know that anything has been done definitely along this line and I doubt whether anything in the line of spraying will prove successful on account of the insects being under the leaves.

Possibly on small plantations—and I am not speaking from experience outside, but experience inside—applications of such things as tobacco dust as preventatives would prove beneficial.

Mr. Pierce: Couldn't it be driven in with a blowing machine easier?

Professor: It may be, yes, sir.

Mr. Pierce: It would not kill them?

Professor Waid: No, it is more of a preventative than anything. They don't like the odor of tobacco apparently; at least they will not be very liable to attack anything that has tobacco on it.

Mr. Shirer: We might just as well make an unconditional surrender to them. I have covered the plants with tobacco dust and they just ate them up anyway. It is no use; I just hand the thing over to them; they can have their own way; if they leave any for me all right; I have quit fighting them.

Mr. Farnsworth: Brother Shirer raises so much tobacco down in that country they are accustomed to it and they become immune. (Laughter.)

Mr. Renshaw: Afriend of mine, Mr. Starkey, an ex-florist at the Boys' Industrial School, told me a couple of things in regard to the melon louse. They had an outbreak apparently at one corner of their patch, just a few vines being affected, and they inverted a tub over the hill and put some bi-sulphide of carbon under the tub, and succeeded in killing the insects and did not hurt the plants. Whether it could be applied on a large scale has to be tried.

Mr. Tussing: We had considerable experience with them, as I said. We did not find anything effective, and, as Mr. Shirer said, when they once got in a patch my judgment is that we might as well give it up to them. You will find 'some of these striped or spotted ladybugs, and you will find them probably before you have discovered any of the aphis, yourself. Wherever you find any of those, if you will look you will generally find aphis. As to destroying the plant, we just pull up the whole hill and take it away from the field entirely, as they breed in it, and after they get fully started I haven't found anything of account. We aim to keep them in check; we aim to market our crops and pickles early so that we get as much off of them before they get about.

President Miller: Is Mr. Imlay, of the ninth district, present? If not we will hear from Mr. Lawrence, of the tenth district.

Ad Interim Report from Tenth District.

BY J. A. LAWRENCE.

Mr. President and Members of the Ohio State Horticultural Society:

The apple crop for the past season has been a varied one. In the northern and central part of the district the crop was fairly good, while in Jefferson and Harrison counties it was very light. Prices have ranged from 40c in the north to 50c and 65c per bushel in the central and southern parts. In my own locality a few orchards were very full, while many others, apparently as favorably located and equal in elevation, did not have one-fourth of a crop. My orchard, which is located on a northeastern slope and is on an elevation of about 1,200 feet above the sea level, was heavily laden with apples which were sweet and of fine quality, but only medium in size, as the trees were too full. Late frosts injured or entirely killed all the fruit on low ground, except in rare instances where fog afforded some protection. While with orchards that were more elevated, the difference in bearing seems to be accounted for largely by the fact that there was too much wet weather when many of the orchards were in full bloom; especially those facing the south. Those facing the north, came into bloom a little later and at a time when the weather was more favorable. One fruit grower in the northern part of Carroll county reports that the east and southeast sides of many of his trees were loaded, while the remaining part of the trees were bare. This was supposed to have been caused by the frost. The varieties that seem to be most productive and profitable at least in the central portion of the district, are the Baldwin, Flushing Spitzenberg, Ben Davis, Grimes' Golden, Northen Spy, Duchess, Oldenberg, Yellow Transparent, Rambo and perhaps the Jonathan in the northern part. The Rambo is very much inclined to overbear, and unless thinned, are too small. The Northern Spy does not do well in every location. I know of a number of orchards sloping to the east and southeast where they seem to bear well. For eight or ten years past the Baldwin has commenced dropping badly three or four weeks before picking time. Some seasons this might be accounted for by the weather being unusually warm about the first of September. But there are other causes no doubt besides this. Many of the Baldwins that drop early are apparently free from disease and worms, and the entire crop seems to mature somewhat earlier than formerly. The reason for this is one of the problems of this section. I wish also to mention the York Imperial as being among the very best and most profitable varieties for market. It is a good bearer, good keeper and of fine quality; and a very large per cent. of the apples are perfect. There was not much spraying done this season, and the difference between sprayed and unsprayed fruit was not so marked as at other times. This work, however, in most instances was not done with sufficient care to make a fair test. In my own experience I have observed that it pays to keep all dropped apples carefully gathered till picking time. The cheapest way to do this is by turning hogs in the orchard. As a very large per cent. of apples that drop before picking time are wormy and diseased, we get rid of a great many enemies by keeping these closely gathered up. And the fact that very little damage was done by insects in our own orchards is credited largely to this method or prevention.

The peach crop was nearly a failure. Warm weather in March swelled the buds, and late frosts killed most of the crop. So far as I can learn the Crosby seemed to stand the test better than other varieties. Seedling peaches did not fare any better than budded fruit this season. The plum crop in some localities was very good; while in many places it was a failure. The vicinity of Carrollton, Carroll county, is peculiarly adapted to plum culture. In this locality there was a full crop of nice, perfect plums, without spraying or jarring the trees. The varieties that did the best were the Damson, Lombard and Shipper's Pride. The price to producers was about $1.50 per bushel.

The pear crop was very small. Most of the leading varieties have been blighting very badly excepting the Keiffer and many small fruit growers and farmers are discarding all but this variety. The cherry crop was short and prices high. The leading varieties that do well here are Early Richmond, Eng. Morrello and Ohio Beauty. The grape crop was very promising at first, but before maturity fully seventy per cent. rotted.

In regard to small fruit growing, the eastern portion especially, of the district, is among the most interesting sections of the state. Large quantities of all kinds of berries are grown and marketed near by, in the manufacturing districts of western Pennsylvania, and heretofore there has not been much note taken of this fact. The past season the supply was not equal to the demand; and prices ruled high. Many growers who had almost dropped out of the business a few years ago on account of low prices for berries and the high price of labor, are being stimulated to begin anew.

The northern part of Carroll and southern part of Columbiana counties are making rapid strides in potato growing, over 100 car loads being sent out the past fall over the Pennsylvania company's lines in a distance of eight miles, be-

sides what was shipped over other roads. The yield throughout this section was from 190 to 300 bushels per acre; and the quality is said by many buyers to be among the finest in the state. Prices to producers ranged from 48 to 60 cents per bushel, aboard the cars. The potato crop is fast becoming one of the most profitable crops of the district

We note also that there is an increasing interest in the subject of floriculture free rural mail delivery and rural telephones gives the farmer much more time for this kind of work.

We noticed also June, in one of the local papers, that Mr. Betscher, florist of Canal Dover, sold a prize peony to C. W. Ward, of Queens, N. Z., for $1,000. It is about eight inches in diameter, blossoms early and is named after Mr. Betscher, who is the original grower of the plant.

I will say in addition to this that I sent out quite a number of letters to secure information for my report. One thing I tried to find out in these letters was the horticultural societies through the district. Perhaps it was because there was not much time, although there was enough for answers if they had been sent promptly, but at any rate I was not able to ascertain the number of societies, if there are any in the district.

I am sorry to thus have to announce a lack of interest in the subject of horticulture. The men who are engaged in horticulture are after the money—the most of them, but of course there may be some who are in it for pleasure; but the most of us are in it for the profit there is in it, but I think the men who are in this business ought to have as much interest in the subject and in the welfare of others to answer a letter for the benefit of others.

President Miller: Is there any discussion on this paper?

Mr. Shirer: I would like to ask Mr. Lawrence whether the shape of the York Imperial apple was satisfactory.

Mr. Lawrence: It is not perfect in shape; it is rather a lopsided apple. I hardly know how to describe the shape of it; it is not a perfectly shaped apple, yet it seems to take well in the market. I have had the apple for a number of years; it is a good annual bearer and a very large per cent. of the apples are perfect. They are an excellent keeper and of fine quality. The shape might be somewhat objectionable, but that is the only difficulty.

Question: Do you sell to the commission men?

Mr. Lawrence: Sell to consumers.

A member: I had a customer who said he didn't want to order York Imperials on account of their lop-sided shape. He said it was a splendid apple, but it is a poor seller in the general market on that account.

Mr. U. T. Cox: That is true to a considerable extent. Another fault is that it scalds very badly in cold storage; and I am satisfied it will not keep down in our country with the Rome Beauty; because I have tried it; and for quality I don't think it is anything extra. There are several apples I would rather plant than York Imperial.

Question: How about its color—it is not bright?

Mr. Cox: I have seen them very bright; if they lack red color they have a good yellow color.

Mr. Lawrence: I don't know how the York Imperial does farther south, but it surely does well in our district, that is, in the center of the district, Carroll County, while the Rome Beauty is not good at all. That has been my experience.

Mr. Shively: The York Imperial does well with us. It has been signified here that it is a poor-shaped apple, but it has a keeping quality and a flavor that comends it to any market where once it is introduced.

Mr. Cox: The York Imperials, some of them, do well down in our country. I have seen trees full; I have seen them good color, good size, and I have heard men say it was as fine in quality as they ever ate, but that did not convince me. (Laughter.)

Mr. Freeman: They are certainly one of the standards in the second district, and I think it is very important to take into consideration the districts from which they are reported, for upon that matter depends the success of all our work in fruit growing.

Mr. Tussing: I may say that I have found Mr. Cox's statement is true as to York Imperials.

Mr. Hunt: It is a very fine apple when it does not scald; that is the only objection. You will go in the market and find barrel after barrel very fine, and then maybe one scalded, and that kills them.

Question: Is the shape against it?

Mr. Hunt: No; it is only the scalding, and the cause of the scalding of apples is something we have to learn. I had a car load of Greenings that were put up in a tight box car and they had gone through the sweating process, and they were yellow. I put them in storage and never had apples keep so well. When we opened the car they were wet, and as we picked them out they began to dry. I have picked a basket of Greenings from my own tree and put them on the shelf and they scalded badly, and what the cause is I don't know, but I think if they can go through the sweating process as hay, they will keep better. They do for me. I keep my apples in bulk where I can, and I prefer of late years to have them go through this sweating process in a pile rather than take them direct from the tree to the storage.

President Miller: The work of our society requires the appointment of several committees, which I will take this time to announce.

I will appoint on the

Program Committee: Mr. Farnsworth, the Secretary, and Professor Green.

Committee on Membership: Mr. Sterling, Mr. Vergon, and Mr. Lawrence, of Marion.

Committee on Auditing: Mr. Hunt, Mr. Sloane, and Mr. E. G. Cox.

Committee on Obituary: Professor Lazenby, Professor Selby, and Mr. Freeman.

Committee on Final Resolutions: Mr. Cushman, Mr. Ballou, and Mr. Hyde.

Committees on Exhibits: Fruits—Mr. Montgomery, Mr. Blackman, and Mr. Waid. Flowers—Mr. Carr, Mr. Pierce, and Mr. Scarff. Vegetables—Mr. Ed Tussing, and Mr. Shirer.

I presume the gentlemen all know the duties of these committees.

Ad Interim Report from Ninth District.

BY JOHN D. IMLAY.

The Ninth District is situated in the southeastern part of the state, is a very hilly territory with mining, clay and iron industries, and general farming, with only sufficient fruit and gardening to supply local demand.

Owing to the valleys being protected by hills and different aspect of high and low grounds, sand and clay soil, we have more or less fruit crops, every year.

I make report from the record of our Muskingum Horticulture Society, during the year, as follows:

February 12: Strawberries, blackberries, raspberries, apples and peaches in good condition.

March 12: Peaches and cherries, particularly of the sweet varieties of the latter, destroyed by recent sleet and extreme cold. Vineyards in good condition.

April 9: Most varieties of fruit, particularly those in bloom at time of late freeze, badly damaged. Some peaches left, no apples at all injured, sweet cherries probably destroyed, 50 per cent. of cherries and plums destroyed, 90 per cent. of the strawberries in bloom at the time of frost destroyed. Vineyards in low grounds badly damaged, those on the hills probably uninjured.

May 14: Moderate crop of small fruit. Light crop of all kinds of fruit. Apples apparently plentiful on high lands of Bluerock township.

June 11: Apples scarce in some sections, more plentiful in others, but falling badly. Peaches also scarce. Cherries a failure. Small fruits quite plentiful in some localities. Ben Davis apples more plentiful than other varieties. Prospects from grapes excellent.

July 9: The prospects for apples in some sections not flattering, more plentiful in others, and one report of almost an entire failure, except of the Rambo. Blackberries and raspberries plentiful. Prospects for an abundant potato crop unusually good, and vegetables in general, in better conditions than the average. Fair prospects for grapes, with the fruit in excellent condition.

August 13: Moderate crop of apples and very few peaches. Grapes suffering somewhat from worms, rot, etc.

Sept. 17: Apples ripening prematurely and falling by reason of extreme dry weather. As a result apples will be scarce.

Oct. 8: Strawberry plants much damaged by drouth.

I also add that we had a few peaches from the district of Frazeysburg. This is perhaps the largest shipping point in this section.

Apples and all fruit very high in price all summer, easy to sell, very few people received any for canning purposes. Apples bringing 80 cents per bushel all summer, until shipped here in October and November, then they were delivered here at 60 cents per bushel, good Spys, Baldwins, etc., from the northern part of the state. The season has been very dry, beginning in April and May, in fact too dry to prepare ground for planting, until very late, June was seasonable, but the drouth of July, August and September was surely long and trying, and caused a great shortening of all vegetable crops, thus causing high prices. Gardeners selling most any kind of vegetables off quick and at satisfactory prices, the only thing was to get the product to sell.

Yet those gardeners that went right ahead, had a very good crop, considering the drouth, with little trouble to sell and make money.

President Miller: Are there any delegates from county societies who desire to make reports? If so we will hear them now; if there are none we will have the reports of the delegates to the American Pomological Society, Professor Lazenby's name being first.

The American Pomological Society.

BY WILLIAM R. LAZENBY.

The twenty-eighth biennial session of the American Pomological Society was held in Horticultural Hall, Boston, Mass., Sept. 10-12, 1903.

As this was the first meeting of the society in New England since 1887 it was one of peculiar interest to eastern horticulturalists.

Of the nearly 500 members of the society about 40 per cent. or 200 were present. Members were in attendance from thirty-five states or provinces, and there were duly accredited delegates from at least thirty distinct horticultural organizations. E. M. Woodard, Matthew Crawford and William R. Lazenby represented this society.

Among some of the oldest and best known members present were William C. Strong and Jacob W. Manning of Massachusetts, Dr. F. M. Hexamer of New York, and W. H. Ragan of Maryland.

The address of the President, Major C. L. Watkins, of Des Moines, Iowa, was, as usual, brief and comprehensive. He stated that the American Pomological Society was the most honorable and useful horticultural organization known to history, and that no other pomological society had such boundless opportunities for usefulness. He said the society should continue to impress upon fruit growers generally, .that new fruits, originated in their own botanical districts, are much more likely to succeed there than those originating outside. Large sums are still wasted each year in the indiscriminate planting of new or untried fruits from distant regions, without inquiry as to soil, elevation, gauge of temperature, etc., at their birthplace, or their adaptability to the location where planted.

In recommending new fruits neither the American Pomological Society or any other can wholly guide public taste. The ultimate aim of American pomology must be to bring wholesome fruits within the reach of all American citizens, and at such prices that everyone willing to work may eat of them.

One of the most memorable addresses of the session was by that intellectual giant, Prof. L. H. Bailey. His subject was, "The Attitude of the Schools to Country Life." He claimed that until very recently there was nothing in our schools that had a breath of country left in it.

Teachers and text books were largely the product of the city, and little or

nothing of the strength, wholesomeness and beauty of nature was ever brought to the mind of the child.

The boys and girls were seldom led to a sympathetic acquaintance with the common things about them. The general attitude of the schools was not one of hostility, but of apathy and indifference, the result of ignorance of the real significance of country life.

Mr. J. H. McFarland, of Pennsylvania, had a paper on "Fruit Gardens," what they are, and what they are for. He argued that the "Fruit Garden" should be artistic and beautiful as well as useful. That it should serve the æsthetic as well as the physical nature of man.

Mr. G. Harold Powell, of the United States Department of Agriculture, presented a carefully prepared paper on "The Relation of Cold Storage to Orcharding."

After briefly discussing the importance of cold storage he gave in detail some of the methods and results of the investigations on this subject that are now being carried on by the Department of Agriculture.

Among some of the points brought out was that as a rule it will only pay to keep the best fruit in cold storage, for it costs just as much to store poor fruit as good. Storing never improves the fruit, it simply preserves it for a greater or less length of time. Some classes and some varieties of fruit are much better adapted to cold storage than others. The great advantage of cold storage to commercial orcharding is that it tends to equalize the distribution of the fruit crop and lengthen the season for marketing.

"Grading and Packing Fruit for Long Shipment" was discussed by the well known peach grower, J. H. Hale, of Connecticut. While there was nothing especially new in this address it emphasized in a forceful way the importance of thorough grading and neat, careful and artistic packing in order to secure the best results in marketing. A smaller package than the barrel was recommended for the finer apples, and the individual wrapping in tissue paper of choice specimens was advocated.

Hon. W. A. McKinnon, chief of Fruit Division, in the Canadian Department of Agriculture, presented an excellent paper on "Fruit Inspection and the Export Trade."

He stated that the Canadian export trade in fruit had been seriously injured and was threatened with complete destruction, by reason of the methods of unscrupulous shippers, who falsely represented their shipments. Some legislation similar in scope and effect to our state laws regarding control of fertilizers, had been enacted, and vigorously executed, with the result that the foreign demand for Canadian fruit had greatly improved. Everything now sent from Canadian posts can be relied upon as just what is represented on the package, and the honest fruit growers and fruit packers of the dominion no longer suffer from the rascally methods that were formerly in vogue.

These inspectors have the same liberty that our inspectors of samples of fertilizers have, going anywhere, and they seem, from the report that was made, to be very energetic indeed, sampling apples at many different points, on the wharves just before they were taken on boats, or wherever they happen to be stored. Of course they do not sample a great number of packages, but they pick out quite a number of barrels, empty them right out and see what they are. In the early history of this inspection work they condemned a great deal of fruit, for if they found a single barrel in the inspection of a shipment they condemned the whole shipment. They did not go any farther; they made no further inspection of that particular shipment; if there was just one barrel that did not come up to the standard the whole shipment was condemned.

Mr. George T. Powell, of New York, discussed the question "Should the Commercial Grower Plant Varieties of High Quality?" His conclusion was that whenever varieties of high quality were reasonably productive and vigorous they should be selected, because the market value of fruit was being governed more and more by quality.

"Judging Fruits by Scales of Points," "Waste in Apples" and "Fruit Culture in the Pacific Northwest," were discussed by F. A. Waugh, W. R. Lazenby and S. W. Fletcher, respectively.

The evening sessions of each of the two days were of unusual interest and full of inspiration. The general subject of the first evening was, "The Progress of Pomology in America." This session was under the direction of Prof. John Craig, of Cornell University. It consisted in a series of short papers and addresses on different phases of pomological development in America by representative horticulturists of the United States and Canada.

The general subject of the second evening was "Ideals in Pomology." This was a platform meeting in charge of Charles W. Garfield, of Michigan. It consisted of numerous five-minute talks by leading members of the society. The following were among the topics treated: "The Ideal Dessert Apple;" "The Ideal Cooking Apple;" "The Ideal Apple for Export;" "The Ideal in Fruit Packages;" "The Ideal Fruit Growers' Society;" "The Ideal Fruit Growers' Family;" "The Ideal Fruit Grower's Home;" "The Ideal Journal for the Fruit Grower;" "The Ideal Book for the Pomologist." These and other topics were discussed in a light, sometimes breezy, but always serious way, and the meeting was an all-inspiring success.

This brief sketch fails to fitly represent the genuine worth, the real dignity, the unselfish aims of the American Pomological Society. Few national organizations have a more honorable record or have accomplished a nobler work.

President Miller: We will hear Mr. Woodard's report as a delegate to The American Pomological Society.

Report of Mr. Woodard.

The Massachusetts Horticultural Society is indeed fortunate in having such a beautiful building in which to hold their horticultural meetings. Although the interior arrangement seemed faulty to some of us, in some respects, the room in which the exhibits were displayed was large, well lighted and filled with fruits grown in various states. At one end of the hall was a bank of palms, ferns and flowers; at the opposite end, on the steps leading to the auditorium, were several fine specimens of palms and other plants.

Of course "apple was king," and there were probably twice as many plates of this variety as of all others combined. One thing that impressed me was the size and beauty of the western apples. Their smooth skin and high color made them attractive to the eye at least.

There were three exhibits from Minnesota, one of 38 plates of seedling apples, some of which were grown in the extreme northwest corner of the state. Another exhibit from the same state contained 109 plates of seedlings, quite a number of which resembled the Chenango strawberry in shape and general appearance. There was a collection of fifty varieties of apples that originated in the province of Quebec, Canada. It seems that the region north and northwest where a few years ago it was thought that good apples could not be grown, is going to rival the eastern and central sections of the United States in the value of its horticultural products. Other exhibits of special interest were a collection of 32 plates of pears from the "Old Homestead" of Patrick Barry, and one of 116 varieties of pears and 97 of apples from Elwanger & Barry, of Rochester, N. Y. Michigan Agricultural College had an exhibit of 161 plates of apples, 7 pears, 18 plums, 9 peaches; among the latter was one plate of each of the Engle and Willett, two new varieties that are proving to be of value in the state north of us.

The B. & O. railroad showed what grew along their line in West Virginia in an exhibit of 136 plates of apples, 34 of peaches and 10 of pears.

What the women could do was shown by a collection of 70 varieties of fruit grown out of doors by Mrs. E. J. Clark, of Pomfret Center, Conn., also three varieties of grapes, 3 of pears, 5 of apples and one of peaches grown under glass. Among the apples were specimens of Roxbury Russett and Alexander. The specimens grown out of doors were considerably below the standard, but the others on a cushion of white tissue paper looked beautifully fragile and waxlike.

Two exhibits of grapes attracted my attention especially—one of several bunches of the King, grown by W. K. Munson, of Grand Rapids, Mich., the other the Regal grape from Matthew Crawford, of Ohio. When these two varieties are placed on the market we will certainly have a royal collection.

In a smaller room adjoining were several collections of flowers, mostly gladiolus and dahlias.

To summarize, the exhibits consisted of about 900 plates of apples, 250 of pears, 75 of peaches, 75 of plums and 40 of grapes.

Two things I regretted very much—one that I was not better acquainted with the men who make up the American Pomological Society; the other that the Ohio State Horticultural Society did not make an exhibit. The meeting occurred the week after the State Fair, and it would have been comparatively easy to have arranged for a display, and I believe a general collection of fruit could have been gathered that would have excelled anything shown at Boston.

Pointers: Prof. Taft, of Michigan Agricultural College, says that the Murdy and Ponds seedling plums are two distinct varieties, also the Italian prune and Fellemberg.

I wish to thank the Society for the privilege I had in visiting the city of Boston, and especially in enjoying the papers and meeting the men that comprise the American Pomological Society.

Mr. Cushman: Something has been said about the greenhouses visited by these gentlemen. Maybe they can tell us something about those houses. I am told that Mr. Rawson has the largest house in the United States; I want to know if that is true.

Professor Lazenby: I can not speak certainly, but he has undoubtedly a large acreage under glass; I should judge he had twelve to fifteen acres anyhow of actual space covered with glass. I know of one house he told us was six hundred and fifty feet long. This house was about fifty-six feet wide; and he has houses of various widths and various sizes, located at various points on his farm. He builds a house when he thinks he needs it; when there is a demand for a certain crop that is grown in these houses he builds a greenhouse.

We visited another place, that was the Heidinger Brothers. They live within the corporate limits of the city of Boston, of course some little distance from the center. One of the brothers told me they had fifty-five acres. Upon this is a large extent of glass. I think they have houses larger than any that I saw at Mr. Rawson's. But the point that was of interest to me was the amount that they raise on this area. One of the brothers—and there is nothing boastful about them I am sure; they were both there with their coats off and seemed to be working the same as the other men—said they never felt satisfied unless their average sales amounted to four thousand dollars a month from those fifty-five acres of ground. I said, "Four thousand dollars a month; you mean nearly fifty thousand dollars a year?" "Yes, sir," he said, "fifty thousand dollars a year." Of course, that includes the sale from the greenhouses as well as the land, but every foot of the ground is occupied.

President Miller: Any other discussion or questions on the reports of these delegates?

Question: I would like to ask the Professor if these receipts are entirely from the vegetables or if they include something else to make that amount?

Professor Lazenby: This firm has quite a large area of fruit—the Dwarf pear, and currants and gooseberries planted seemingly very close indeed, and then they had quite a large number of early apples. These apples were gathered in this way: The ground was heavily mulched under the trees with refuse packing material and they just picked them up after they dropped. They never picked any from the trees. They do not bruise any falling on this material, and it keeps the soil moist; and every day or two they simply went around at the proper time and picked up the apples. They weren't very large trees, but seemed to be yielding a fine crop of fruit.

Question: What is the foundation of their soil?

Professor Lazenby: Well, it is rather a dark colored soil; it is what you might call a rich garden loam. They use great quantities of fertilizers. We saw great quantities of compost and I presume the natural quality of the soil has been changed very much by the fertilizers. It looked like a rich garden soil.

Professor Waid: I would like to ask if Mr. Rawson is still making use of the electric light at night and if he finds it profitable.

Professor Lazenby: Yes, sir, he is using the electric light, but he says if it were not that he could make connections with the city plant it would not pay. I asked him particularly. He said if he could not get his light cheaply he did not think he would use it, but having it, and the light not costing much, and having his poles right between two houses with large reflectors, so that one-half at least of two houses are well lighted, he says it pays him very well to keep them burning.

I asked him this question: Whether he did not think it would be better in cloudy weather to have the incandescent light in the house, with reflectors; have quite a large number of these small lights along the ridge of the house, or somewhere, where by the use of reflectors you could throw the light down on the plants. It seems to me that at night is the natural time for plants to rest and if we could increase the light during cloudy days and through the short days of winter I don't see why that might not work well, but I believe this has not been tried. I am in hopes we may be able to do a little at it this winter.

Mr. Pierce: If the Professor was around a greenhouse a little while he would find moonlight very conducive to growth.

Professor Lazenby: I do not dispute the point that plants grow at night, but I think it is natural to have a lower temperature and greater or less rest of plants at night. That is a general rule in plant growth.

Mr. Cushman: I want to bear Mr. Pierce out on his moonlight influence. I believe one week's moonlight nights, or five or six nights of moonlight will beat three weeks of dark weather.

President Miller: Before we recess I know we would like to hear from our Chaplain.

Chaplain Collier: I was a little surprised that the secretary, when he referred to the apples, should say that he wished the Ohio apples had been on exhibition at Boston, for they would have been so much nicer. I was surprised to think that a secretary coming from Ohio—and I suppose born in Ohio—would make that kind of a concession—*certainly* the apples from Ohio would be the best that were there.

This is a new place for me. There are very few meetings that I have ever attended but what I was at home, but this is a new meeting entirely.

I had the good fortune to be born in Ohio seventy-four years ago, and I have this one item to refer to, in the apple-growing line. In 1845 the severest frost that has ever occurred in Ohio occurred that summer in June. I had read in some paper—I was then a boy—that fires kindled in an orchard would save the apples. Our apples were about the size of a walnut. We had oak stumps in the orchard and we had the wood and chips and I said to father, "I will try the experiment," and I spent the night carrying out chips to these oak stumps and kindling the fires. Our orchard was the only orchard in the whole country that had apples and people would stop and inquire how it happened that our orchard had apples when there were no other apples in the country. The night paid well.

I am glad to greet you tonight. It has been all new; not that apples are new and good apples are new, but the whole discussion and everything that has been said has been new.

I am glad to see you. I trust your convention will prove very profitable in the line which you are taking. God bless you.

Thereupon a recess was taken until 7:00 o'clock P. M. of the same day.

WEDNESDAY EVENING SESSION.

December 9, 1903.

THE OHIO STATE HORTICULTURAL SOCIETY convened pursuant to recess and was called to order at 7:25 P. M. by President Miller, who said:

The first in order tonight will be the address of welcome by Mayor Clipinger, of Delaware. (Applause.)

Hon. H. C. Clipinger: Mr. President and members of the Ohio State Horticultural Society: If I understand the objects of your society, it is to encourage and promote the upbuilding of waste places; to increase and promote the cultivation of fruits and flowers; to beautify the earth and multiply its products for the use and benefit of mankind. The man who promotes the growth of two apples where one has grown before; he who supplants thistles and noxious weeds with beautiful flowers is a public benefactor. The man who can double the yield of his orchard can not only supply the consumer with fruit at a less cost, but benefit himself at the same time by his increased product.

Unfortunately there are some people who have no eye for, or appreciation of the beautiful. A pond of stagnant water in a field of rank weeds is the same to them as a lake of pure, cold water, surrounded by a well-kept landscape and embellished with God's most beautiful flowers. They would permit the streets and alleys of a city to become overrun with weeds and rubbish if it cost a little time and labor to remove them. They would not expend a penny or two to spray each fruit tree unless they were given a written guarantee that their fruit crop would be doubled.

There is something wrong, something lacking in the makeup of the man who has to be forced to keep his place clean; the man who will permit rubbish to accumulate, weeds to grow and thrive about his home is a detriment and drawback and a nuisance to the neighborhood in which he lives.

Delaware has some of these drawbacks to improvement and progress, as well as other localities. For some time there has been a very worthy organization in this city, a society known as The Ladies' Civic Association, their object being to improve and beautify the city. Unfortunately they have not received the encouragement that they deserved. Business men and property owners who should feel themselves directly interested have failed to give them the support that their efforts have entitled them to, and if your meeting here will awaken our people to a higher appreciation of clean and better streets, the growth of flowers, and increased production of fruits, we will feel deeply indebted to you.

This leads me to speak of some improvements that should be encouraged in our own city—the systematic planting and trimming of shade trees; better streets and pavements with uniform curbing; grass plots and lawns in public places, on the sides and in the center of wide streets. Why should not the citizens of West William, California and Sandusky streets park the sides of those streets? East William is susceptible to a small park in every square. These things would not only beautify, but would enhance the value of every piece of property and would be money well invested, for there would be less roadway to take care of. Clean streets, yards and homes cultivate refinement, contentment and good citizenship.

One of the best-kept places in this city is the grounds around the passenger and freight station of The Hocking Valley Railway. These grounds, located in rather an out-of-the-way place, are always clean and well kept, the small lawn smoothly and closely mown, the flower beds clean—no weeds—and pleasant to look upon. They are a credit to the person or the persons who have them in charge, and are an example for others to follow.

During a visit this past summer to Dayton, the Gem City of Ohio, I was impressed with what seemed to me to be the universal inclination of the people to improve and beautify their homes. What impressed me as a very novel and effective idea was that many of the back fences had been provided with stout string or wire upon which countless morning-glory and ivy vines had grown in such masses as to entirely hide the fences themselves, and looking over the fences of many of these back yards revealed a tidy ward. a well-mown lawn, beautiful flowers, an abundance of shrubbery, an atmosphere of fragrance and contentment. Many of the improvements in this Gem City are inexpensive, but it goes to prove that great results may come from organized effort, and a little labor in the right direction.

I take pleasure in extending to you a very hearty welcome and assure you that, personally, I feel a deep interest in the business of your Society. I trust that your meeting here will be not only conducive of much good to yourselves, but it will also benefit us and stimulate our citizens to a better appreciation of flowers, shrubbery and the growth of fruit. (Loud and long continued applause and cheers.)

Response and Address by Wm. Miller.

In behalf of the members of the Ohio Horticultural Society I return our thanks for your cordial welcome. We know that the lives of many men and women have been made better, and their influence upon the world greater, because of their sojourn in your city, and we trust that our lives may be broadened by our sojourn among you.

We are an organization of fruit growers, nurserymen, gardeners and florists, coming together as in our annual custom, to compare experiences, and learn what progress and what achievements have been made along the lines of our chosen work. It is said that the men who gave us the Baldwin apple, the Concord grape, the Bartlett pear and the Elberta peach have done as much for their country as those who added Alaska, Hawaii or the Philippine Islands to the map. While we do not expect our achievements to become a part of the world's history, we expect to feed the world with better fruit and more of it.

Ours is a privileged craft. It is no secret that our stock in trade is largely water. Just now most other watered stocks are at a discount. But the more our stock is watered the better our customers are pleased, and the better the demand. The larger the apple, the peach or the berry, the more water it contains, and the better the market. In fact we are here to learn how best to water our stock.

You need have no fears for the behavior of our members. No people in Ohio outside the clergy consumes less alcohol and tobacco than do the fruit growers. We do not claim that this is because of any superior honesty or morality—for some of us are accused of shingling peaches, selling spurious or diseased nursery stock, or putting the small apples in the middle of the barrel. But it is because a plentiful diet of fresh fruit lessens the craving for stimulants. So we are a missionary society seeking to make the people better and happier who purchase our watered stock. This may seem a little mixed, but don't be arraid of us.

Our constitution provides for an annual address by the President. I assure you that this time there will only be enough of it to comply with the letter of the law.

The appropriation made by the last General Assembly for the purpose of carrying on the work of nursery and orchard inspection is about exhausted, and will not be renewed without effort on the part of those interested in the continuance of the work. The commercial fruit grower has learned that the San Jose scale is one of his enemies to be annually reckoned with, has learned how to combat it, and cares for no further legislation. The nurserymen whose business would be most injured by abandoning this work at this time have no separate state organization to press their needs. The fruit trees in the smaller orchards and on the village lots are menaced with destruction by this pest and need the guardianship of this department.

The state aid given to this society would seem to make it in a measure responsible for and warrant it in assuming a sort of guardianship of the horticultural interests of the state. I would therefore recommend that the society take such action as will authorize the executive committee to secure a renewal of the appropriation.

Because of frequent local failures of fruit crops, it would seem desirable that the Ohio Agricultural Experiment Station maintain several orchards in different parts of the state for the purpose of testing varieties and learning the value of both new and old sorts in the various localities where fruit may be profitably grown. Would it not be well to ask the Board of Control to secure proper locations and begin work of this kind?

It is to be regretted that the Ohio Commission to the St. Louis Exposition was so hampered for want of funds that it could not assist in making an exhibit of the agricultural and horticultural industries of the state. Your executive committee, as instructed, proffered the assistance of the society in making an exhibit of horticultural products. But the small appropriation of $75,000 was deemed insufficient to erect a building and provide salaries and entertainment for the commissioners commensurate with the dignity of the great state the commissioners represent.

Our meeting this year is in a town largely given to preparing young people for the life work before them. Some may not yet have made choice of a vocation. Pardon me if I allude for a moment to some of the advantages of fruit growing as a life occupation.

In the first place it is pleasant to know that there is yet one occupation where the individual and his work may be known; where he may broaden and develop along his own lines without having his individuality swallowed by a great corporation.

The day is past when men think that the fruit grower needs no education. In no industrial field is there greater need of an all-round liberal education. The sucessful fruit grower needs a knowledge of botany, chemistry and entomology. Civil and mechanical engineering will be found useful acquirements. The work will require a business training and ability of no mean order. A well managed fruit farm will give opportunity to use all the knowledge acquired in a college education, and will be a perpetual post-graduate school. To the student there is a world of opportunity in it. New problems constantly arise. The control of insects and diseases affords continual opportunities for study. The control of plant life by hybridizing and crossing opens up an unlimited field for scientific investigation. Let the good work go on until the fruit grower of the future may attain so near perfection that he will realize less of change when transplanted to that garden where the street trees bear twelve manner of fruit, yielding their fruit every month, and the leaves of the trees are for the healing of the nations.

Allusion has frequently been made to the necessity of having our secretary made the executive officer of a recognized department of the state government, whose needs would be provided for in the regular appropriaiton bills, whose office and library would be in the State House or some adjacent building. The horticultural interests of the state need an officer and a headquarters of this kind, and the present seems an opportune time to begin efforts to secure them. The state is out of debt, and has a satisfactory balance in its treasury. The horticulturists of the state have helped to bring about this condition by paying their share of the financial burdens, and also by withholding their demands for the recognition to which they were years ago entitled. We believe that the governor and legislature elect will look with favor upon measures for the advancement of the agricultural interests of the state. It is no doubt essential that the first secretary of horticulture should be a good organizer, and it may be urged that we haven't the available man who could meet the requirements of the office. Let us create the office and then develop the man. Place one in the position and if he proves incapable, at the end of the year let him step down and out. In the civil war General Grant did not come to the front until the other generals had been shelved. We may have to try several before we find a man with the ability to make the office a credit to the society and of value to the state. There is a pressing need for the office, and we feel confident that the man will arise. I would recommend that the executive committee be instructed to bring this matter before the legislature at an early date.

I would urge that the practice of sending delegates to the meetings of kindred societies be continued. It will help us to keep out of ruts, and the reports will add value to our program.

Music by the Smith Sisters' Quartette.

President Miller: You will notice on our program we were to have an address from Doctor Bashford. After the program had gone to the printer we heard that Doctor Bashford had a previous engagement, but he agreed to provide us a substitute, which he has done in the person of Professor T. G. Duvall.

Professor T. G. Duvall: Mr. President, Ladies and Gentlemen: As your president has said, I am here tonight to speak a few words to you in welcome that should have been spoken by our president, Doctor Bashford.

I always find it difficult enough to meet my own engagements, and it is increasingly difficult to be obliged to rattle around in Doctor Bashford's shoes tonight, painfully aware that he wears several sizes larger than my own, and that on this occasion I am especially at a disadvantage in not having had a previous education that would meet your expectations of one who is to speak to you on such an occasion.

I want to speak tonight just for a few minutes of something I believe we appreciate. I think if one of our ancestors of two or three generations ago should suddenly come back to our planet and visit with us for awhile he would be greatly astonished at many things. Perhaps not the most astonishing thing, but one that at any rate would interest him after a while would be the capacity and extent to which men of mutual interests get together for mutual benefit and instruction, such, for instance, the cause which brings you together. I believe it is one of the educational signs of the times; that we have to such an extent in our country, meetings or societies for the diffusion of useful information among those who can make the most use of it, and that men of real concern for these practical interests do combine to bring together their best experience to the making possible of larger results in the practical affairs of life.

It used to be that man had very few of the opportunities of an education and he attacked the practical problems of life with such wit as he could bring to the matter, and very scarce were the opportunities for training himself, particularly for the especial work he was to do. That seems to be so much changed today it is a matter of particular comment. No man today does his work in a corner; no man today seems to be forced to do without the information that can be gathered on any corner or in any society devoted to the extension of the knowledge that is to be known in his field. It is a remarkable thing, particularly, I think, in this time and in our country, that so many societies of this type are to be found, and to be so well cared for by the enterprise, the fidelity and devotion of those interested in the business. School teachers get together and they bring the combined knowledge of those in that line; and laborers get together and they bring the best results of their experiences; and you horticulturists get together and you bring together the best results of your own experiments and your own information, and I understand, too, as I see from reading your program, that what is known in further parts of the country is brought to bear upon your particular problems here. I say it is a peculiar thing in this time and particularly in our own country that the educational means for particular ends are so brought home to each man that he has the opportunity of knowing the best things that apply to the particular business he is carrying on. And, more than that, if he does not hustle and learn what is to be known, he is going to be left in the race pretty soon. Not only *may* he know, but he is *obliged* to know; it is not only a wonderful opportunity, but he is forced to meet the competition of wit against wit, of head against head, of brain against brain, with a fair field for everybody, and know all that is to be known concerning these businesses; he is bound to know it or to be left in the race.

I call that one of the signs of the times. We today are in the midst of a time when every man has the opportunity of having the best information concerning how to do his particular business in the very best way, and if he does not do it why then he goes away back and sits down and nobody has the slightest care whether he ever rises up or not again in the fierce competition of bringing things to pass.

I think in our own country that fact that I mentioned is perhaps one of the reasons why we as a people are so capable of adapting ourselves at each emergency to bringing about the best results in a practical way. Talk about the adaptability of the American people! It is simply because the men in every avenue of life get the opportunity and also improve the opportunity of knowing the best things to be known in applying principles to the particular affairs of life. That to my mind explains much of what they say is so peculiar to the Anglo-Saxon race, and peculiar also to the Anglo-Saxon race in its many opportunities.

One other thing I should mention. The second point is one of the signs of the times educationally at least, and I will try and keep near the field with which I am more or less familiar.

I think we have today more than ever before a high appreciation of the value of what is called "Higher Education," whether you take it liberally, a liberal education or technical education. Today, I think, in a very striking way we may say that we have won in this matter in fields that we had supposed not to be much interested in the matter. That is to say, I think that those who might have been supposed the last to surrender to the claims of higher education are those who are leading in the matter. I particularly refer to the hard-headed business man, the man who is bringing things to pass in the world about us; the captains of industry, those financiers who today are maintaining the financial situation, not only of this country, but of the world. It is not at all to be surprised at when you stop to think that those men, not having had the opportunities of a higher education, have felt the strain of the situation that has brought them where they are, and, realizing that if we are to do as well in the next generation, and better, there must be better opportunities for those who are training for those things.

I can realize, as many a man at least has done, that it was somewhat of a jolt when he would read that John D. Rockefeller, within the last twelve years, had given twelve million dollars to the cause of higher education. I do not suppose that any man who ever knew any thing about Mr. Rockefeller's method of doing business and the way he looks up investments would ever suppose he would have invested a dollar of it without it was what is looked upon by him as a good investment; and I am forced to the conviction that when Rockefeller gives his twelve millions or Mr. Carnegie his upwards of fifty millions—and you might go through the list—those men recognize in a business way, in a practical way, the necessity of men in the next generation being very well prepared to meet the emergencies and the necessities of the coming time. And I can do no more than just leave this thought in mind, that up to this time we have been able by such wit and such education as our fathers and ourselves have had, to bring to pass what has been done, but we have made it impossible for the next generation to do with what we have done; we have made it impossible for those to build on what we have builded and what we have raised, without having far better means of success than we have had; and that is bound to be felt more and more. Educationally, we have come to a place where the thing is bound to go forward on the basis of a larger investment of the means of higher education for the larger number.

When I was twenty-three years of age and I turned to college, I will tell you frankly I scarcely knew anything about what a college was, or where to find one, and I had been brought up in the capital city of my native state, and under circumstances that would be supposed to have given me every opportunity of knowing just where these colleges were. I had heard of Harvard and Yale at that time and such colleges, no more than the average boy today has heard of the university of Podunk. The fact of the matter is in those times we did not have those matters, those opportunities and the means of education there is among us today, influences to meet the people that we have right at our doors.

Actually it was merely by an accident that I found out that I might have an opportunity of a higher education, and where to go to get it. And it happened simply by casual conversation. Today I suppose one can hardly go in any part of our country, especially in our state, without running into those who know more about that in the far corners of our state than I could and many others could, away back not more than twenty years ago, in the centres of our culture and civilization.

It is just with some thoughts like these, which I am sure you share with us all, that I add we—speaking for the whole university—extend our greeting to you and our welcome to you to our city; it is because we feel that you, as an educational force in the state, are doing practically the same kind of work we are doing, in a general way of bringing to pass the light—information—that is necessary to getting our work done in that way.

I add as a representative of the university our welcome to you, and wish you a most prosperous and profitable and enjoyable session. I thank you. (Great applause.)

President Miller: Among the things we are obliged to know in these days is how to spray. We have brought here and have with us tonight Professor Parrott of the New York Experiment Station, to tell us how. Perhaps he learned some of this in Ohio and at the expense of the State before he went to New York, and if he did we are entitled to know it.

It will take a few minutes to prepare the canvas, and while we are waiting suppose we have the report of our delegate to the Apple Growers' Congress at Saint Louis, Mr. Farnsworth.

Mr. Farnsworth: I might say that it came to me as a very agreeable surprise when our president notified me that the executive committee wished me to visit the Apple Growers' Congress at Saint Louis and report to this body whatever information I might glean therefrom.

Report of Delegate to the Apple Growers' Congress

Held at St. Louis November 17 and 18, 1903.

The meeting was called to order by President Dunlap at 10 A. M., in the spacious parlors of the Lindell Hotel.

The attendance was good at the opening session and continued so throughout, in spite of the fact that the most of the apple growers of the west had received but slight financial returns from their trees this year, or, as President Dunlap put it, "Most of us had to walk to the meeting."

First on the program was the annual address of President Dunlap.

He stated that more apples were ruined annually by fungous diseases than were harvested.

Bitter rot and curculio were now demanding considerable attention.

The enormous planting during the last decade make it incumbent upon us to study the problem of marketing as never before.

The export trade is valuable to us, and should be carefully fostered.

Recent experiments seem to indicate that the scale cannot be communicated from fruit to tree, and if this is proven upon further trial it will remove the main excuse used by the German government in attempting to exclude our fruit.

National legislation for the scale is highly important.

The report of our statistician was more nearly correct than any other.

The next address was by L. A. Goodman, for many years the secretary of the Missouri Horticultural Society.

He stated that commercial apple orcharding has become a profession. He named as the first requisite for success, a liking for the work. The second is enthusiasm, and the third intelligence to know what and when and how to do. The fourth requisite named is knowledge, or experience, to be able to know what the trees need before it is too late.

He laid a great deal of stress on having the proper subsoil. It as well as the surface soil should be fertile and porous, and if mixed with iron so much the better for the color of the fruit. Rocky or gravelly soil is usually satisfactory, but requires more labor. Elevation above the land surrounding is also necessary for air drainage. Elevation above the sea level is important south of 40 degrees.

The selection of varieties was very important, and we should carefully consider adaptability to soil, climate and market. Benefit by the experience of others similarly situated. Newly cleared land was preferable. Prepare the soil thoroughly before planting, and propagate your trees from bearing trees showing individual merit. He thinks his own orchard would be worth twice as much to-day if the trees had been thus propagated. He would leave five or six branches and a center stem in pruning. He recommends double working in order to secure roots of known hardiness. Remember that trees are as much alive as a dog or a horse, and treat accordingly. Would prune in a pyramidal form, like a spruce tree to avoid forks. Mix varieties to secure proper pollenization. Give the tree a good start the first year after planting, and cultivate the first three years. Push the young tree and do but little pruning during this period. The next three years do most of the pruning. He uses wooden wrappers fastened on with wire to shade the trunks and protect from borers and rabbits. He leaves these wrappers on three or four years, and cleans around the tree each year to protect from mice. He grows the cultivated crops the first five years and then cover crops. Aims for early maturity and quick results, and when the tree fails cuts it down and has another coming to take its place. In the South and West less pruning is required than in other sections. He especially emphasized the importance of preserving a central stem, with branches at right angles to the trunk. Under his conditions of orcharding he prefers the dust spray and uses it exclusively.

Prof. Burrill, of Illinois, objected to new ground on account of the greater danger of root rot.

Secretary Goodman thinks root rot is mainly caused by unfavorable subsoil.

Senator Logan, of Arkansas, indorsed the use of virgin soil and stated that he did not find root rot any worse there than old soils.

Secretary Goodman thought it might pay to use the Spy as a stock for top working.

Mr. J. W. Stanton, of Illinois, then spoke of "Marketing Apples." Fruit well handled and packed is half sold. Head line all barrels and haul on springs, and do not stand on end. Load in ventilated cars and do not allow to lie in sun. Advised growers seling from orchard to cold storage companies. It had been very difficult this year to secure expert help. Watch the pickers to prevent damage to trees. Sell all in orchard, whether No. 1 or No. 2, at same price, so as to avoid disputes in grading.

Mr. Williamson, of Illinois, thought we should aim at quality more than quantity. Nothing but No. 1 should be packed. Tempt the consumer by something good and establish a higher standard of honesty.

Secretary Goodman spoke of the advantage of uniformity in the size of the apples in a barrel, and mentioned instances where the extra large or fancy fruit had been removed, leaving a more uniform and attractive grade than before.

Wesley Greene, of Iowa, said the best fruit in the market was always sold at a good price. Accurate crop statistics are a great help in marketing. We should strive to establish well defined grades of fruit which would mean something. Jonathan and Grimes Golden stand as representing good quality.

Prof. Burrill, in his address upon "Bitter Rot," said the trouble has been with us twenty-five or thirty years. It develops on the outside of fruit even when not punctured. It is produced by spores from cankers on the limbs. The professor exhibited small branches which had been inoculated with the bitter rot fungus, and showed canker plainly., Spores also live over on the mummified apples. Thorough spraying early with Bordeaux. is a preventative. The apples must be kept well covered with Bordeaux. The spores begin to scatter about June 15th in central Illinois. Early spraying for scab will not prevent bitter rot, but three thorough sprayings, beginning just before spores scatter, is effectual. No proof had been found that this rot is carried by insects. A high temperature and moist atmosphere are favorable to its spread. A given canker will produce spores but one year usually. The spores do not live on leaves. This disease was mainly troublesome south of 39 degrees.

Prof. Crandall, of the University of Illinois, spoke of the ravages of the apple curculio. He said the apple curculio was very different in its habits from the plum curculio. One plot which was sprayed sixteen times gave 84 per cent. of punctured fruit, while a plot which was not sprayed at all gave 97 per cent. per cent. punctured. Most of the damage is usually done by plum curculio. Jarring would hardly be practicable on apple trees, owing to their size. The plum curculio is more abundant and more easily caught than the apple curculio. The larvæ nearly all pupate within one and one-half inches of the surface of the ground. Fifteen of the insects were laid in the sun and all were dead in thirty minutes. Even when shaded they only lived a few hours out of the ground. Ants and birds also destroyed them when turned up by the disc harrow. Cultivation during pupation seemed to be the best remedy, and the usual period is from about June 15 to Aug. 1. The destruction of fallen fruit was also advised, and hogs or poultry are beneficial in the orchard, for this reason. The plum and peach curculio are the same. It is a bad practice to have a peach orchard near an apple orchard. The thorn apple and wild crab are the native food of the curculio. Apple orchards adjoining forests are more subject to damage from curculio.

A member said hogging had stopped the ravages of the curculio in his orchards.

President Dunlap thought that spraying just as the pink of the blossom was showing had diminished the damage done by the insects, and this view was corroborated by Wm. Miller and others.

Mr. Williamson thought cultivation had banished the curculio from New York orchards.

Wm Miller said the plum growers in his locality had protected their plums from the curculio by early spraying.

Prof. Stinson then addressed the society, in the place of Prof. Taylor, and spoke of the magnitude of the forthcoming fruit exhibit. Four acres will be devoted to this purpose, and it is expected to have a complete exhibit at the opening of the exposition. It is proposed to have a special day at some time during the exposition, to be known as apple day. The congress proposes to see that every visitor on that day receives an apple and probably more or less literature, advancing the interests of the apple growers.

Tuesday evening Prof M. B. Waite, of Washington, spoke of the diseases of apple tree roots. He said these diseases were very difficult to investigate, from their hidden nature. The spread of the roots far exceeds that of the branches, and a great many different fungi prey thereon. Root rot usually but not always attacks trees from five to ten years old. Tip burn is often a symptom of root trouble. Root rot is found on old as well as new land, but perhaps oftener on the latter. Very little can be done in treatment for this trouble, but we should be very careful in the selection of nursery stock that is free from it. High culture will enable some trees to overcome it to a certain extent, but we must avoid an excess of nitrogen. Put out all sick and dead trees and burn at once. Crown gall is especially troublesome in the nursery. He said Prof. Tuomey, who was the leading authority on this disease, thinks crown gall the same on all fruits. Budded apple trees were not as badly hurt by it as were the grafted, but the woolly aphis was worse on the budded. He would not plant trees with the crown gall, although he had seen them succeed well, and instanced a block of Japan plums in a Hales, Ga., orchard. Where crown gall is above ground, cut it off and cover with thick Bordeaux and copperas. Disinfect trees and tools in grafting. He recommended formalin in preference to corrosive sublimate as a preventive of scab in potatoes, as the latter seems to slightly lessen the power of germination, while the former seems to serve as a stimulant. He recommended using one pint to thirty gallons of water and soaking two hours. He advised the use of stable manure and tobacco dust as remedies for woolly aphis. He would select a deep and well drained soil for the soil as a measure of prevention. Some varieties are affected more than others. In some portions of Indiana the Grimes is considerably affected.

Prof. J. C. Blair gave an illustrated lecture upon mixing and spraying outfits, which was valuable, but difficult to report without the illustrations. He emphasized the need of thorough mixing of the materials, and advised the use of soft water where possible. He thought it better to slake the lime the day before using it, but would not let it stand more than a couple of days after slaking before using.

The committee on grades and packages reported in favor of a box of the following dimensions, viz., 11½x11½x20 inches, all inside measurements, the sides to be ¼ to ⅜ thick. No. 1 apples should be 2½ inches in diameter for such varieties as Ben Davis, Baldwin, Greening, etc., and 2¼ inches for Russets, Janets and Jonathans. They must be practically free from worms, hand picked and of normal color. No. 2, ¼ inch less in size and not over 20 per cent. showing scab, dry rot or defacement. All to be well faced and carefully packed.

Benjamin Newhall, the apple exporter of Chicago, was to have spoken on "Our Apple Exports and the Foreign Market," but was unable to be present, and sent a paper instead, which was of much interest and value. He said the crop of 1902 was of such poor quality that not enough of it could be exported to supply the demand. This year the quality is much better and the prospects are that about 4,000,000 barrels will be exported. Many new markets are being supplied. The German government examines the fruit very carefully, and the presence of scale condemns the fruit. A great many pears are being exported also. Apples must be packed very tightly for foreign shipment. The freight from New York to Liverpool is 62 cents; dock and warehouse charges, 18 cents; commission, 5 per cent. Seven days are required in shipment from New York to London and the fruit is usually sold the second day after arrival.

Present Dunlap said French market conditions were very peculiar. There are no large commercial orchards, and the fruit from the small orchards of the peasants is all sent to market by January 1st. He had seen poor shriveled apples sell at 18 cents cents per pound in Paris in March. After January 1st all the good apples to be found are those which are grown under glass and sell for 20 or 30 cents each. Hothouse fruit is all sold at auction there, and he had seen peaches sold at $1.40 apiece at wholesale, in boxes holding six peaches. Cherries were sold at 20 cents each and grown on dwarf trees about 4 feet high. Strawberries 30 cents each the last days of March. The French market ought to offer great inducements to exporters after January 1st.

Secretary Barnes, of Kansas, said we might find some unexplored markets this side of the ocean yet, as choice apples were selling at $1 per dozen in the City of Mexico.

Prof. Powell said the Russet was a great favorite in France, and fruit of this variety, which was not specially selected for export, had netted $4.90 per barrel and upwards. He said we had hardly begun to develop the foreign markets as yet, and the most delicate summer apples can safely and profitably be shipped to Europe if properly handled.

President Dunlap said the French standard of excellence was somewhat different from ours; they esteem Willow Twig and Rox Russet highly and consider Stark the best of all

Mr. Voorhees suggested that we market more apples in baskets, for the convenience of the purchaser.

Prof Powell, who has been experimenting in storing and shipping fruit under the auspices of the Department of Agriculture, spoke on storage of fruit. He said fruit which was kept at the lowest safe temperature kept better both while in storage and after being taken out than that stored at higher temperatures. Different varieties will keep various periods, and if left beyond the limit will deteriorate rapidly. Fruit should be perfectly colored, but hard when picked for storage. Scald is probably caused by a ferment of the fruit itself. Fruit picked before mature, scalds worse than mature fruit. Wrapping does not seem to retard it, but a low temperature does. Trees with too dense heads yield fruit of poor color, and it scalds worse than fruit which is well colored. In picking apples, especially red ones, make two or three pickings that all may be colored. Apples ripen much faster off the trees than on. When the temperature at picking time is in the fifties there is no need to rush to storage in undue haste, but if warmer hurry them in. Large fruit grown on young, rapidly growing trees does not keep as long as slower growing ones. The tighter the package the better in cold storage, except that a loose, open package will cool through quicker. Apples keep longer in boxes than in barrels, and wrapped fruit will keep a month longer than unwrapped.

The exhibit of fruit was small, as was to be expected, owing to the failure of the apple crop in the West. A few fine specimens were shown, however, and Ohio was represented by an exhibit from Lawrence county, and of course there were some Rome Beauties among them.

The members seemed to be very enthusiastic as to the aims and purposes of the society, and I believe it will be productive of much good.

We have been devoting our energies almost exclusively to the production of fruit and have neglected the problem of successful marketing. There are millions of mouths watering for the American apple at home and abroad, and it is our business to fill them (for a consideration). I believe the prospects were never brighter for the apple grower who will grow choice fruit and market it intelligently. There might be many times as many apples consumed as at present with benefit to the consumer and profit to the grower.

Some Notes Upon Sulphur Sprays.

BY PROF. P. J. PARROTT.

An interesting turn in the "scale" problem in Ohio was the introduction of the lime-sulphur-salt wash for the treatment of this pest. It had heretofore been believed that this spray could not be profitably used in the East because of unfavorable climatic conditions. This belief seems to have been based upon some experiments* conducted during 1894 in the Atlantic States. In these tests this sulphur spray was "fatal to only a small percentage of scales." But in 1900 another test** was made of the same wash with much better results; for there was apparently a complete destruction of the scales. The conclusion

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*Page 71, Bulletin No. 3, New Series, Div. of Ent., U. S. Dept. of Agric.
**Page 34, Bulletin No. 30, New Series, Div. of Ent., U. S. Dept. of Agric.

drawn from this latter experiment was that if two or three weeks of dry weather followed the applications, the wash "might be as beneficial in the East as on the Pacific Coast." In the minds of many it was still a matter of doubt as to the advisability of using this wash, because of the risk in having the necessary conditions of weather to insure satisfactory results. It was thought that if hard rains should follow the applications of the wash as is very apt to be the case during spraying season, the treatment would prove only a partial success, besides causing considerable loss in time and labor. But during the summer of 1901 there were reports of successful results with this wash by orchardists in New Jersey and Delaware; and in 1902 extensive tests in Illinois, Georgia, New Jersey and New York demonstrated that this wash, even used under trying weather conditions, had been remarkably efficient and was apparently well adapted to the needs of eastern orchardists.

The results obtained in these experiments influenced many orchardists throughout the eastern states to try the wash for this spring's treatment of their trees. In Ohio and New York the wash was extensively used during March and April for the treatment of orchards, and taken as a whole the results have been very satisfactory. Many orchardists were wholly unfamiliar with this wash and had to learn by themselves the proper methods for its preparation and application. For the most part the wash proved to be a safe and reliable remedy for the scale and promises to be the best spray for the average orchardist in the treatment of this pest.

In view of the increasing interest in the use of sulphur washes in this state for the treatment of orchards, it seems well at this time to present some of the important results obtained by various experiments with the sprays following headings: Sulphur sprays for summer treatment, sulphur sprays for fall treatment, sulphur sprays for spring treatment and some modifications of the lime-sulphur-salt wash.

SULPHUR SPRAYS FOR SUMMER TREATMENT.

The lime-sulphur-salt wash, prepared after the common formula, cannot be used safely upon foliage of fruit trees. For this reason treatment with the wash is restricted to the dormant season. Moreover, spraying for the scale during summer is usually considered inadvisable, because of the habits of the insect and the difficulty of making thorough applications on account of the interference of the foliage. But as sulphur possesses both fungicidal and insecticidal properties, it has been suggested that a weaker strength of the sulphur wash might be used which would be safe to foliage and of value in controlling disease and scale. Apparently little was done to determine the worth of such spray for summer treatment until last year when Mr. V. H. Lowe of the New York Experiment Station undertook some experiments and reported fairly satisfactory results with a formula, using 1 lb. of lime, 1 lb. of sulphur, and 50 gallons of water. Thinking there was need of more data upon this and other sprays containing sulphur for summer use, experiments were made by the Ohio Station during June with the following formulæ: Lime 1 lb., sulphur 1 lb., water 50 gal.; soda soda 2 lbs., sulphur 2 lbs., water 50 gal.; lime 5 lbs., sulphur 5 lbs., water 50 gal.; soda 2 lbs., sulphur 2 lbs., water 50; lime 5 lbs., sulphur 5 lbs., water 50 gal.; soda 5 lbs., sulphur 5 lbs., water 50 gal.; lime 10 lbs., sulphur 10 lbs., water 50 gal.; soda 10 lbs., sulphur 10 lbs., water 50 gal. The washes containing lime were boiled for one hour, and those using soda for twenty minutes. The applications were made upon Salway peaches. The plans and results of experiments are given in the following table:

Formula.	Date of Treatment.	No. and Variety of Trees Treated.	Results upon Foliage.	Results upon Scale.
Lime 1 lb. Sulphur 1 lb. Water 50 gal.	June 25	5 Salways	No injury.	Apparently all active larvae at time of treatment killed. No appreciable effect upon old scales. Newly born larvae visible two days after treatment.
Soda 1 lb. Sulphur 1 lb. Water 50 gal.	June 25	5 Salways	Slight injury.	Ditto.
Lime 2 lbs. Sulphur 2 lbs. Water 50 gal.	June 25	5 Salways	Very slight injury.	Apparently all active larvae at time of treatment killed. No appreciable effect upon old scales. Newly born larvae visible two days after treatment.
Soda 2 lbs. Sulphur 2 lbs. Water 50 gal.	June 25	5 Salways	Slight injury.	Ditto.
Lime 5 lbs. Sulphur 5 lbs. Water 30 gal.	June 25	5 Salways	Extensive injuries. Many leaves scorched.	All exposed larvae killed. Living larvae not detected for six days. Many mature scales killed.
Soda 5 lbs. Sulphur 5 lbs. Water 50 gal.	June 25	5 Salways	Serious damage.	Ditto.
Lime 10 lbs. Sulphur 10 lbs. Water 50 gal.	June 25	5 Salways	All foliage seriously injured. Nearly one-half upon ground.	Larvae killed and apparently about 90 per cent. of old scales. Active larvae were visible two days after treatment.
Soda 10 lbs . Sulphur 10 lbs. Water 50 gal.	June 25	5 Salways	All foliage burned. At least ¾ upon ground.	Ditto.

From the results of this experiment it seems safe to conclude that washes containing not more than one pound of sulphur and one pound of lime or caustic soda to fifty gallons of water can be used with little injury to peach foliage, and that the washes containing lime were safer than those using caustic soda, and that at this strength are of no practical value in controlling scale. As fungicides, these formulæ, in some experiments by Prof. A. D. Selby of this Station, proved to be inferior to a week Bordeaux mixture (1-25) for the control of peach diseases. As stronger washes proved destructive to foliage, summer treatment with sulphur sprays gives very little promise.

SULPHUR SPRAYS FOR FALL TREATMENT.

There is a demand for a reliable spray for the fall treatment of the "scale." This is especially desired by owners of large orchards, who, hindered by rains during the spraying season and the slow work of spraying, often find it impossible to treat their trees in as thorough a manner as is desirable for the successful treatment of this pest.

The satisfactory results obtained by spring applications of the wash have prompted many peach growers in this state to consider the advisability of using this spray for the fall treatment of their trees. But as there was some doubt as to the effects of such treatment upon the peach buds, and its worth in the prevention of leaf curl, treatment was usually deferred till spring. As it was important to have data upon these points, the Ohio Experiment Station in the fall of 1902 undertook a preliminary experiment which would be briefly described as follows: The trees selected for the experiment were 36 Elberta and 5 Crosby, peaches, and 31 Burbank and 16 Lombard plums. The trees were about seven years old, and had been in bearing for four years; but the fruit has been of very little value because of the scale. The bark of all the trees was much incrusted, and the leaves and fruit well spotted with scales. The treatment of the trees was made Nov. 17 and 18, when they were sprayed once carefully with either the Oregon or California wash. At this time young scales were numerous and active, and nearly all the foliage was off the trees, with the exception of a few leaves at the tips of the topmost branches. During the thirty days immediately following the applications there were heavy rains, Nov. 26, 27 and Dec. 2, 7 and 13. Forty infested trees, including ten of each of the varieties, were reserved as checks.

The trees were closely watched during the summer and carefully examined Aug. 14, 1903. The results obtained with the spray are in brief as follows: The peaches were practically free from scale, as only a few specimens were discovered now and then at the base of some of the new growth. Solitary scales were found upon three fruits; with this exception the fruit and foliage were entirely clean. There was much more foliage and new growth than upon the unsprayed. The condition of the treated Lombards was similar, but with the Burbanks the results were not so satisfactory, owing to the rough bark, common to this variety, which undoubtedly protected a number of the scales from the spray. These trees mae a vigorous growth, producing a dense foliage, which was quite free from scale. The fruit was as a rule clean, but still a few plums were found marked by the scale. At the base of the new growth of five of the trees small colonies of young scales were found; but with these exceptions the treatment had almost entirely destroyed the scale.

The unsprayed trees could by July 14 be picked out by the appearance of their foliage. The leaves were less numerous than upon those treated and were much discolored with purplish spots. Much of the foliage of the peaches was turning to a red or yellow, and then gradually falling. The stems of peaches were well marked with the scale. The yield of plums was good, but was worthless because of the scale. On Aug. 14 there were upon all the untreated trees many dead twigs and branches and an abundance of living scales.

The results obtained by this treatment for the control of the San Jose scale were satisfactory and compare favorably with those of spring applications of the washes. There was no apparent injury to the fruit buds of any of the varieties treated. Owing to the slight attack of leaf curl in this orchard, the experiment furnished no evidence of the value of the applications of the sulphur washes at this season for the prevention of this disease. It would seem desirable to delay the treatment of peaches with these washes till spring, as one thorough application at this time, while buds are dormant, will suffice for both the scale and leaf curl. If, however, it is necessary to make applications in the fall, it would seem to be the safer course, till more is known of the fungicidal value of these sulphur sprays at this season, to make the usual applications of Bordeaux mixture in the spring for the prevention of leaf curl. In this test the Oregon mixture proved a safe and reliable remedy for the scale, but no better than the California wash.

SULPHUR SPRAYS FOR SPRING TREATMENT.

The California and Oregon washes were extensively used this spring. In New York and Ohio they were preferred to the whale oil soap or petroleum sprays. The use of the sulphur sprays in the latter state largely centered about Gypsum; and for the purpose of having a good basis for the interpretation of the results obtained by orchardists with these sprays in this section, the writer arranged with Messrs. Duroy and Yule for the treatment of their peach orchards by the same washes.

The following notes are largely based upon the results obtained in this experiment.

CONDITION OF TREES.

For the experiment 350 Salways, 350 Smock and 540 Elberta trees were reserved for treatment. The two former varieties are eleven and the latter onee seven years old. The scale was first detected in the orchards three years ago and by 1902 nearly all of the Salways and Smocks were infested. The condition of the trees was such that the owners contemplated abandoning further cultivation of the orchards. Whale oil soap and petroleum had been tried the year before in an attempt to save the trees, but had proven only a partial success. The poor results obtained had led to the conclusion not to make further treatment until a more efficient spray was introduced.

PREPARATION OF THE CALIFORNIA AND OREGON WASHES.

The washes were prepared after the following formulæ:

CALIFORNIA WASH.		OREGON WASH.	
Lime	15 lbs.	Lime	15 lbs.
Sulphur	15 lbs.	Sulphur	15 lbs.
Salt	15 lbs.	Copper sulphate	1½ lbs.
Water	50 gal.	Water	50 gal.

Preparation of California Wash—The lime was slaked with hot water to form a thin paste. The sulphur and salt were then added and were frequently stirred to keep the ingredients well mixed. The wash was boiled for one hour with steam and was then diluted with hot water to make the required amount.

Preparation of Oregon Wash.—This wash was prepared in the same manner as the above except that the copper sulphate was dissolved separately and added to the diluted wash.

TIME OF APPLICATION AND WEATHER CONDITIONS.

The application of the washes was commenced on March 9 and was continued at irregular intervals to April 15. Seventy-two Salways and Smocks were treated with the Oregon and the remaining trees witn the California wash. During the early part of the spraying operations the weather was as a rule clear or slightly cloudy, and was very favorable for making proper treatment. Towards the last the weather changed and was a severe test to the washes. The precipitation for this period is recorded as follows: March 10, .22 inches; March 16 .24; March 20, .26; April 3, 1.76; April 11, .72; April 13, .56; April 14, .31. During the month following the last application the record is for April 24, .11 inches, and April 30, .19.

CHECKS.

Five hundred and twenty trees, including the same varieties, but principally Elbertas, were reserved for checks. Nearly all of these were infested with scale and were as regards growth and past treatment the same as the sprayed trees.

RESULTS ON SPRAYED TREES.

The sprayed trees were carefully examined during the latter part of August and their condition again noted September 4. The effects of the washes upon the scale may be described as follows: Upon the worst infested trees the heavy incrustation of scales was flaking off, leaving the bark in parts clean and polished. The scales, still adhering, were much weatherworn, and when scraped with a knife blade appeared as a loose dry scurf. Upon the large branches, limbs and trunks the treatment had effected an almost entire destruction of the scales. In the upper parts especially at the base of the new growth of at least 20 per cent. of the trees individual scales or small colonies of young white scales were found. Upon two trees single branches were found, upon which scales in all stages were quite numerous. In view of the satisfactory results upon other trees, the apparent reason for this occurrence was imperfect treatment. The treatment upon the moderately or slightly infested trees was the most satisfactory, as the bark was cleared of scale and fungus growth and given a rich, polished appearance.

An interesting and valuable result of the treatment with these washes was the protection to the trees from leaf curl, which was especially marked upon the Elbertas. It is claimed by many peach growers that the attack of the leaf curl in this locality this spring was the most destructive known for years. In spite of the severity of the attack, the trees treated suffered very little, if any, from this disease. They made a thrifty growth, and produced an abundance of foliage and satisfactory yields of fruit.

RESULTS ON UNSPRAYED TREES.

It is not necessary to describe the effects of the scale upon the untreated trees, as the work of this pest is well known. But in view of the disastrous work of the leaf curl upon the untreated trees attention is called to the illustrations and appended tables, 1, 2, 3, which clearly show the condition of the checks from this disease. To obtain these figures in the table, three branches from each of three trees sprayed with the lime-sulphur-salt wash and from three unsprayed trees were selected and properly labeled. On May 11, June 5, Aug. 14, the leaves, blossoms or fruits upon these branches were counted. Upon these figures an estimate was then made of the total number of leaves, blossoms or fruit to each tree respectively. The crop in each case was obtained by actual count. The leaf curl was exceedingly destructive to the Elbertas, many of which were wrecks before the end of the summer season. Not a tree of the checks of this variety matured a single fruit. Nearly all of them had branches or twigs killed. The living wood produced very scanty foliage and was often scaly. The sprayed trees produced a satisfactory yield of fruit and an abundant healthy foliage, and are apparently in much better condition for the winter than the unsprayed. The final results upon sprayed and unsprayed trees with respects to the leaf curl are given in table IV. While a record of all the trees in the experiments was not made, there is no reason to doubt but that these are average yields for the orchards under experiment as noted.

TABLE I.

Records of Tree No. 1 not Sprayed, and Tree No. 1a Sprayed.

Date of Examination.	Number of Tree.	Number of Leaves upon Branches.	Number of Leaves Curled.	Number of Blossoms or Fruits.	Computed Number of Leaves to Tree.	Computed Number of Curled Leaves to Tree.	Computed Number of Blossoms and Actual Number of Fruits to Tree.
May 11	Tree 1. Branches 1	141	124	9	4,818	4,214	548
	2	564	476	86			
	3	382	347	43			
May 11	Tree 1a. Branches 1	576	7	98	7,078	151	1,409
	2	318	8	63			
	3	589	16	136			
June 5	Tree 1. Branches 1	19	11	0	404	202	0
	2	32	11	0			
	3	27	14	0			
June 5	Tree 1a. Branches 1	967	92	92	11,140	430	808
	2	450	19	23			
	3	950	31	62			
Aug. 14	Tree 1. Branches 1	0	0	0	1,720	0	0
	2	204	0	0			
	3	260	0	0			
Aug. 14	Tree 1a. Branches 1	982	0	29	13,005	0	414
	2	450	0	16			
	3	1,400	0	44			

TABLE II.

Records of Tree No. 2 not Sprayed, and Tree No. 2a Sprayed.

Date of Examination.	Number of Tree.	Number of Leaves upon Branches.	Number of Leaves Curled.	Number of Blossoms or Fruits.	Computed Number of Leaves to Tree.	Computed Number of Curled Leaves to Tree.	Computed Number of Blossoms and Actual Number of Fruits to Tree.
May 11	Tree 2. Branches 1	410	408	37	13,204	12,624	1,605
	2	238	238	41			
	3	360	310	47			
May 11	Tree 2a. Branches 1	484	11	80	14,081	108	2,128
	2	170	0	48			
	3	580	1	62			
June 5	Tree 2. Branches 1	23	10	0	603	244	0
	2	8	3	0			
	3	14	5	0			
June 5	Tree 2a. Branches 1	783	16	27	20,348	227	661
	2	382	7	19			
	3	654	0	14			
Aug. 14	Tree 2. Branches 1	67	0	0	1,225	0	0
	2	0	0	0			
	3	20	0	0			
Aug. 14	Tree 2a. Branches 1	789	0	6	24,871	0	218
	2	750	0	11			
	3	640	0	2			

TABLE III.

Records of Tree No. 3 not Sprayed, and Tree No. 3a Sprayed.

Date of Examination.	Number of Tree.	Number of Leaves upon Branches.	Number of Leaves Curled.	Number of Blossoms or Fruits.	Computed Number of Leaves to Tree.	Computed Number of Curled Leaves to Tree.	Computed Number of Blossoms and Actual Number of Fruits to Tree.
May 11	Tree 3.						
	Branches 1.........	126	126	10	7,040	6,647	843
	2.........	276	244	42			
	3.........	472	461	50			
May 11	Tree 3a.						
	Branches 1.........	145	1	49	13,358	45	2,701
	2.........	250	0	45			
	3.........	220	1	35			
June 5	Tree 3.						
	Branches 1.........	22	16	0	488	270	0
	2.........	9	8	0			
	3.........	30	7	0			
June 5	Tree 3a.						
	Branches 1.........	259	0	9	17,017	0	685
	2.........	276	0	9			
	3.........	260	0	13			
Aug. 14	Tree 3.						
	Branches 1.........	0	0	0	1,500	0	0
	2.........	150	0	0			
	3.........	0	0	0			
Aug. 14	Tree 3a.						
	Branches 1.........	285	0	8	19,228	0	193
	2.........	345	0	3			
	3.........	275	0	3			

TABLE IV.

Results upon Sprayed and Unsprayed Trees.

Number and Variety.	Treatment.	Yield in Bushels.	Value Per Bushels.	Yield per 160 Trees.	Value of Yield of 160 Trees.
270 Elberta..........................	Not Sprayed	0	$1 24	0	0
450 Elberta..........................	Sprayed	452	....	160 5/7	$199 28
400 Smock..........................	Not Sprayed	10	1 60	4	6 40
350 Smock..........................	Sprayed	350	1 60	160	256 00
150 Salway..........................	Not Sprayed	118½	1 62	126.31	259 20
350 Salway..........................	Sprayed	276⅓	1 62	126.31	259,20
†250 Salway..........................	Not Sprayed	20	1 62	12⅘	20 73
190 Salway..........................	Sprayed	150	1.62	126⅓	204 66
*10 Elberta..........................	Not Sprayed	0	1 24	0	0
1800 Elberta..........................	Sprayed	2,250	1 24	200	248 00

* These results were obtained by an experiment with a soda sulphur wash by Wm. Miller, Gypsum, under the direction of Prof. A. D. Selby, Ohio Agr. Exp. Station.

† Much infested with scale at the time of treatment.

MODIFICATIONS OF THE LIME-SULPHUR-SALT WASH.

A SODA SULPHUR SPRAY.

During the year experiments were made by the Ohio and New York Experiment Stations upon the use of soda for a part of the lime in the lime-sulphur-salt wash. By making this substitution it was thought possible to hasten the preparation of the wash, if not to dispense with the necessity of costly cooking outfits. Owners of small orchards who are limited to kettles for the preparation of the sprays are especially desirous of a sulphur wash that is as cheap but can be more quickly prepared than the lime-sulphur-salt wash. As each station experimented with a different spray, the results of each experiment will be reported separately.

In the Ohio experiments, the soda-sulphur spray, which was tested, was prepared after the following formula: Lime 10 lbs.; sulphur 8 lbs.; soda 4 lbs.; water 50 gallons. The soda and sulphur were boiled in a small quantity of water for twenty minutes. The lime was slaked to a thin paste and was then added to the prepared soda-sulphur solution. The wash was diluted with water to the required amount and applied. The applications were made during November, 1902, upon forty apple, and in March, 1903, upon 550 peach trees. On August 14 the trees were carefully examined, with the following results: The fall treated trees had as abundant crop of foliage and fruit as the unsprayed. The wash removed many of the scales, but the destruction of the scales was not sufficient to be of any practical advantage to the trees. The apples were so badly infested that they were not picked. The spring applications were safe to the buds and were much more efficient in the destruction of the scales. Taken as a whole, the results from this soda-sulphur spray were inferior to those obtained with contemporaneous applications of the lime-sulphur-salt wash.

A SODA SULPHUR SPRAY PREPARED WITHOUT FIRE.

In New York the experiments were largely directed towards determining the value of a sulphur wash, cooked with soda and lime, without the assistance of fire or steam. The formula used is as follows: Lime, 33 lbs.; sulphur, 16½ lbs.,; soda, 4-6; water, 50 gal. The wash was prepared in this manner. In an iron kettle the sulphur was made into a thin paste with water. One-third of the amount of lime was started to slack in the sulphur paste. During the slaking process the mixture was well stirred, and enough water was added when needed to prevent the air slaking of the lime. Before the boiling action was over another one-third of lime was added, and then the remaining one-third. To prolong the boiling action two pounds of caustic soda were then added, and another two pounds. If by this time the mixture was not of a brick red color the remainder of the soda was used. As soon as boiling had ceased the mixture was diluted with cold water to the required amount and applied.

This wash was tested the past spring upon 296 large apple, 26 quince, 225 plum, 5 cherry, 287 pear, and 375 peach trees. Many of these trees were much infested with scale and furnished an excellent test for the merits of the wash. The treatment was made during March and April, before the opening of the buds.

An examination of the trees was made Sept. 21 and 23 to determine the effects of the wash upon the scale. The results from the treatment appeared to be variable. In some cases there were marked benefits, which compared favorably with the results obtained with the lime-sulphur-salt wash. With others the wash did not appear to be so efficient. In studying the notes taken at the time of the treatment of the trees, the reason for these variable results was clearly apparent, viz., the difficulty of getting sufficient heat from the lime and soda to make the necessary sulphur compounds, especially if too much water was used at the start.

In view of the variable results obtained by this spray, its use, unless for experimental purposes or when it is not possible to prepare a wash with fire or steam, is not advised for extensive operations, especially as there are other sulphur sprays that are more efficient and uniform in quality. Owing to the convenience of such a spray for the use of small orchardists future experiments are to be made towards its improvement.

A LIME SULPHUR WASH WITHOUT SALT.

During the year extensive tests have been made with a wash prepared after the following formula: Lime, 15 lbs.; sulphur, 15 lbs.; water, 50 gal. This differs from the California wash in that the salt is omitted. The value of this ingredient is not well understood. It has in the past been generally believed that washes containing it adhere better, and may therefore be more effective against the scale. But experiments this year in Ohio, New York, Massachusetts, Connecticut and West Virginia indicate that washes with or without salt were equally efficient. Attention is called to these results that orchardists may test experimentally this modification of the lime-sulphur-salt wash.

The results of the year's work with the sulphur sprays may be briefly stated as follows:

(1) Summer treatment:—The washes prepared with one pound of sulphur, and one pound of lime or caustic soda, are fairly safe to peach, are destructive to unprotected larvae, and seem inferior to Bordeaux mixture for the prevention of peach diseases.

(2) Fall treatment:—The results of applications of the lime-sulphur-salt wash in the fall compare favorably with spring treatment with the same wash, for the control of the scale. Owing to the slight attack of leaf curl the value of fall treatment for this disease was not determined. Contemporaneous applications of the Oregon wash gave satisfactory results, but not better than the lime-sulphur-salt wash.

(3) Spring treatment:—Spring applications of the lime-sulphur-salt and Oregon washes were very efficient. Treatment with these sprays greatly reduced the numbers of the scale, and prevented serious injuries by the peach leaf curl. Owing to the slight attack of apple scab the experiments with sulphur sprays for the prevention of this and other diseases of this fruit did not furnish conclusive evidence of their fungicidal values.

(4) Modifications of the lime-sulphur-salt wash:—Washes using caustic soda or potash in the proportions mentioned, though in some cases fairly efficient, gave, as a whole, unsatisfactory results. Future experiments are needed to determine a satisfactory formula of a sulphur spray using caustic soda or potash, and the value of such a wash in comparison with the California or Oregon washes.

Extensive experiments throughout the country indicate that the salt in the California wash may be safely omitted. The corrected formula—lime 15 lbs., sulphur 15 lbs., water 50 gals.—is advised for experimental purposes till extensive tests determine its real value.

Question: How do you make it yourself?

Professor Parrott: I put the full amount of lime in the cask and add enough water to cover it and then turn on the steam to slake it. If the mixture is not diluted enough I add enough water to reduce it to a thin paste; and then add my sulphur and salt, and stir it awhile and then boil the mixture only one hour.

Question: I would like to ask you if the color is not a better indication of the condition of the solution, rather than the time of boiling.

Professor Parrott: Well, if you boil the mixture for one hour thoroughly you will get the desired color, the coffee color, which you are aiming to get.

Question: Do you apply it warm?

Professor Parrott: Yes, sir. But I say again, some people have applied it cold and have had very satisfactory results.

Question: In your case how long will it stay good?

Professor Parrott: We have had one experience where the wash remained in a tank three days and gave fairly satisfactory results. At the same time I would advise the mixture to be boiled and applied hot.

Question: In cold weather it is better to have it warm anyway?

Professor Parrott: Yes; it is better. But I am not prepared to say that the cold mixture is not as effective as the hot; we did not solve this question this past season.

President Miller: In preparing the mixture after it had reached the required coffee color we found that in diluting it with cold water the color changed again to a yellow color; would that be an indication that its value was impaired?

Professor Parrott: I do not think so; I believe that the chemist would not advise adding a large quantity of cold water to a hot concentrated solution, because he believes that it does weaken the mixture; but judging from the results of our experiments I do not believe that the use of cold water appreciably affected the value of the wash.

Question: How many times did you have to spray to make it effective?

Professor Parrott: Well, I think our experience at Mr. Yule's orchard indicates that we will have to spray at least two years in succession to get the scale under control, and then possibly we may miss a year and spray the next year; but if I were a peach grower I believe I would spray every year.

Question: At what time in the year?

Professor Parrott: In March or April during the dormant season, before the buds are open.

President Miller: We would like to hear from Professor Burgess.

Professor Burgess: I will say we have used the lime, sulphur and salt wash and I think Professor Parrott is correct in his statement that growers who use it should be very careful to follow the formula as laid down.

On peach trees we have had very satisfactory results even with a somewhat modified form; that is, a form where the salt was dropped out.

We have also tried some tests of using a smaller proportion of the sulphur, and a smaller proportion of the lime when making the wash, but at present I don't think it would be wise to change the old formula. The formula we used was what we call the "one, one, three formula;" that is, fifty pounds of lime, fifty pounds of sulphur, fifty pounds of salt to one hundred and fifty gallons of water; practically the same one that Professor Parrott spoke of.

In regard to applying the mixture hot or cold, we have tried that and we see no appreciable difference in our results, whether the mixture is applied to the tree hot or cold. On peach trees our results have been very satisfactory; on apple trees of good size they have not been so satisfactory although we have checked the scale—held it in check or reduced it somewhat. However, I may say that the work was carried on during March and that heavy rains followed the application. I might add it is also very difficult to thoroughly spray large apple trees with an insecticide for an insect like the San Jose scale, for the reason that if you are going to kill the scale you have got to hit it with the mixture; and the scale is usually the most abundant on the young wood and you must thoroughly cover the young wood. If your apple tree is at all thick it is a difficult matter, and if the wind is blowing that adds to the problem. The apple grower who has an orchard badly affected with the San Jose scale has a very serious problem on his hands.

Question: Does the scale lodge first upon the upper or lower part of the limbs?

Professor Burgess: Just what do you mean by lodge?

The questioner: On the upper part or lower part of the limb; do you notice any difference?

Professor Burgess: Well, perhaps a slight difference; I should expect to find perhaps more underneath than on the upper side of the limb, if that is the point you mean.

Question: In your work of spraying have you found orchards that had been sprayed frequently and have been attacked by the scale?

Professor Burgess: Well, do you mean sprayed with lime, salt and sulphur?

The questioner: With the Bordeaux mixture?

Professor Burgess: With the Bordeaux mixture; why, I don't think that would make any particular difference.

Question: When do you prefer to spray, the early part or the latter part of the winter?

Professor Burgess: I would spray any time during the winter when the weather was favorable.

Question: Any time after the leaves are off?

Professor Burgess: Yes, sir. I will say a few years ago Doctor Forbes, the State Entomologist of Illinois, had a force in the field practically all winter and they sprayed with the lime, salt and sulphur wash, all kinds of trees during the winter and they had very satisfactory results.

Question: Do you think it would be a better method to cook the whole fifty gallons together?

Professor Burgess: In our cooking we haven't used steam—we have used fire; and we have followed the practice of slaking the lime in a little water, adding the sulphur and cooking tha for one hour, then adding the salt and cooking for fifteen minutes longer.

Question: Suppose the receptacle was not big enough to hold the whole fifty or one hundred gallons, would you advise cooking the whole thing together?

Professor Burgess: If I had steam I might cook the whole of it, but if I didn't have steam I believe I should cook part of it.

President Miller: Mr. Duvall wishes to give us an invitation to visit the university sometime during our stay.

Professor Duvall: Doubtless it would be interesting to many of you here to visit the university while in session. I think perhaps the most interesting time for you to visit it would be at the time that we meet in our chapel exercises. It begins at 8:40 and lasts twenty minutes.

Doctor Chamberlain: I move we accept the invitation for tomorrow morning.

Motion seconded and unanimously carried.

President Miller: Is there any further business tonight?

Mr. Farnsworth: Mr. President, in your annual address this evening you spoke of a number of matters which I think are worthy of attention. It has been our custom in the past to appoint a committee to whom the president's address is referred, and I think we ought to follow that custom; therefore, I offer the motion that a committee be appointed to take under consideration the president's address, and report thereon.

Mr. Woodard: I second the motion.

Motion unanimously carried.

President Miller: We will refer that, with your consent, to the executive committee, of which Mr. Cushman is chairman.

Doctor Chamberlain: I move we adjourn until 9:15 A. M.

Motion seconded and unanimously carried.

And thereupon an adjournment was taken until 9:15 A. M. on Thursday, December 10, 1903.

THURSDAY MORNING SESSION.

December 10, 1903.

THE OHIO STATE HORTICULTURAL SOCIETY convened pursuant to adjournment and was called to order at 9.30 A. M. by President Miller, who said:

I see Mr. Persing present and we will first have his ad interim report which was omitted yesterday.

Ad Interim Report of Fourth District.

BY W. J. PERSING.

On the whole the horticulturists of this district were well rewarded for their labors. Where spraying was carefully done and not put off until too late the results were not disappointing. The San Jose scale is on the increase and is being discovered in new territory every year. The efficient corps of orchard and nursery inspectors are doing all in their power to prevent its spread, and reports from those using the lime, sulphur and salt spray are favorable to its control. It is hoped that we may find a spray or something that is more practical and cheaper to prepare for the small orchardist. Hard freezes on the first, second and fourth of May caused heavy losses by killing the blossom buds of many cherries, early blooming strawberries and all the Japan plums.

The cherry crop was almost a failure, except in old orchards where there was from 25 to 50 per cent. of a full crop. Sour cherries brought a handsome return to those who were fortunate enough to have any—three dollars per bushel, and crate furnished by dealer. Clyde produced about 1,250 bushels of as nice cherries as ever grew. The birds, in many instances, took 25 per cent. of the crop. I think it a gross injustice to the fruit growers, especially those raising cherries, grapes, blackberries and raspberries, to have to endure such losses, which no doubt amount to thousands of dollars annually in the fourth district alone. The young cherry orchards in different localities were nearly defoliated by the rose chafers. These insects, commonly known as rose bugs, seem to have found other vegetable growth that appeased their appetite better than the rose, and have turned their attacks to green apples and grapes; also the foliage of apples, blackberries, grapes, and even corn.

European varieties of plums, where not neglected, gave good returns—from 70 cents to $1.40 per bushel. I believe that only thorough spraying will insure a good crop of merchantable fruit. Spraying not only discourages the curculio, but lessens the rot, prevents leaf drop and thus gives a good vigorous tree growth and well-ripened wood. I have on exhibition here a seedling grown by Mr. Henry W. Miller, of Clyde, O. Its color resembles the blue Damson; size large; hangs well until frost, one year until Thanksgiving; productive; rots but little an is almost curculio proof. From descriptions it resembles Green's "Thanksgiving prune," which is being greatly boomed by the introducer. A number of sprouts from this seedling have been dug up and planted by the neighbors, which speaks well for its local popularity. It has been in bearing for a number of years. Fresh plums, not cold storage, at Thanksgiving and even at this meeting, is a rarity; but Mr. Miller's seedling makes such possible. Japan plums were an utter failure, though they were loaded with fruit buds and bloomed full about the middle of April. However, the freezes of the first week in May, just when the blossoms were falling, killed them all, as it also did, to a great extent, the cherries.

Peaches were from 26 to 60 per cent. of a full crop and sold at from 80 cents per bushel to $1.30 for AA. The season was very favorable for maturing and picking. Very little leaf curl appeared in Sandusky county, but in Ottawa county it was very bad in unsprayed orchards, especially on Elbertas. In some sections the "yellows" are very bad and many trees have been dug out and burned to prevent further contamination. Several new seedlings have been brought to my notice and bore moderate crops of promising peaches. One variety, grown by the writer, has borne three consecutive crops. The fruit is large, 8⅞ inches by 9¼ inches in circumference, and five specimens weighed two pounds lacking an ounce. They are attractive and of excellent quality, and ripen at a good season. September 25th they were in their prime, lapping on the Smocks, which were in their prime about September 18th. This seedling is pronounced by horticulturists as promising and worthy of trial.

Pears did well and brought fair prices. Keiffer took the lead as a money maker.

Apples varied greatly, some orchards producing good, full crops, and others a failure. In many orchards they began dropping very early and a couple of heavy wind storms about cleaned the trees; especially was this true of the very large varieties, as the Fallawater. Good fruit brought $1.00 to $1.15 at picking per barrel and package furnished by the shipper. The Ben Davis trees were fairly well filled with fruit, which hung until picked, both of which are in its favor, from a money making standpoint. There has been a great deal of complaint about the poor keeping qualities of apples this fall, and many have been rushed to market on that account, which resulted in a cut in prices. Baldwins are much in favor throughout this section and were fairly remunerative to the growers. I desire to call your attention to a seedling apple, also found on Mr. H. W. Miller's place. It is a cross between the Fameuse (Snow) and Jonathan. It has the size of the latter; shape of the Gilliflower; color striped; quality more than of the Fameuse; hangs on well; season, late fall. I intended having specimens of this apple on exhibition but failed to secure them in time.

Grapes were a light crop and brought good prices; $35.00 per ton for Worden and Concord.

The small fruits have been of minor importance the past few years and prices have ranged high. More attention is now being paid to the strawberry, which started in this season at 13 cents a quart, but gradually dropped to 5 cents. Only the late blooms set and the crop was very short. Strawberries made a remarkable growth after the crop was harvested and late in September a second crop, light of course, was picked, some growers picking as high as one bushel, which they were able to sell at from 20 cents to 25 cents per quart.

Raspberries and blackberries bore good crops and brought from $1.25 per bushel to $2.65. Many who dug out their berry patches a few years ago, when prices were low, are now saying, "If I only had my berry patch!" They should say, "If I only had a new berry patch bearing."

I have not heard any mention of nut bearing trees, but it seems to me that promising nuts should be brought to the attention of the horticulturists and where it is desirable to plant forest trees the nut bearing kinds should have the preference, if possible, thus being of two-fold value to the owner, producing both nuts and timber. I wish to call your attention to a hickory nut growing on the C. Persing estate at Clyde and exhibited here by the writer. The tree is quite productive of very large, quadrangular nuts. The shell is very thick, and contains large, highly-flavored kernels, which are easily extracted, when properly cracked. I have made several attempts to graft this variety on seedlings, but they all proved failures. A seedling pecan growing in the vicinity of Clyde has also produced several crops of very fine nuts; but failed this year, so I cannot exhibit any of its products. I do not see why we cannot grow the pecan here and make it as profitable as it is in some of the southern states, its habitat.

Vegetables occupy a small space with the horticulturists of this district. Sugar-beets produced from 8 tons to 15 tons per acre, and tested from 12 per cent. to 17 per cent., which returned from $40.00 to $80.00 per acre. The fall was very favorable for harvesting and marketing and the prospects are for an increased acreage another year. I am informed that upwards of 80,000 tons were grown in this district the past season.

Cabbage also brought large returns, yielding from 6 tons to 18 tons per acre; at prices ranging from $5.00 to $9.00 per ton, which returned from $30.00 to $100.00 per acre. The rot is a very serious drawback on many farms and the disease is gradually spreading. Where it gets a strong foothold it seems to inoculate the soil for years. Even a four-year rotation does not then help it any. A four acre field, I have in mind, made two failures at cabbage; three crops, corn, wheat and clover, were raised on the field between the two cabbage crops. This year the same field produced 53 tons of sugar beets that tested over 15 per cent. I wish our scientific men could give us a little more light on the subject of cabbage rot or "yellows" as some call it. Cucumbers and muskmelons in the vicinity of Clyde were struck with the blight and were therefore almost an utter failure.

Potatoes were quite variable in yield: from 35 bushels to 200 bushels per acre are reported, but mostly small yields. Many fields were struck with blight and a great deal of complaint from rot is heard. A large per cent. was therefore hurried to market from the field at 45 cents to 54 cents per bushel. Seneca county reports a large increase in acreage, but a small per cent. are being held.

This district is greatly blessed with canning factories, sugar-beet factory, pickling houses, kraut factories, etc., to work up special and surplus products of the farm at profitable prices to the producer, and it is safe to predict that the future of the fourth district is as bright as one could desire.

President Miller: Any questions or discussion upon the paper?

Mr. Shirer: How does that cabbage rot act?

Mr. Persing: It attacks the plant any time after it is set out until it is almost to maturity.

Mr. Pierce: I saw an account of a cabbage grower who said he put a handful of lime around to prevent stem rot; is that the same thing? Do they mean that when they planted their cabbage they put this lime on to prevent stem rot; did they mean this common rot that we have that rots around the head?

Mr. Persing: I am sure I don't know.

Professor Selby: That is a special disease. I would like to ask Mr. Persing with regard to field applications; whether they have really tested lime as a means of eradicating this black rot germ from cabbage soils.

Mr. Persing: Not that I am aware of; it has never been tried.

Professor Selby: I would expect very considerable assistance by liming, in the matter of killing the germ from infested ground.

Question. Apply before planting?

Professor Selby: Yes, it must be applied before planting if you expect benefit on the cabbage crop, and I think in that particular district the lime would be found to favor rather than retard growth. The analogy is that of the onion smut and the club root fungus with both of which we find the liming is a profitable specific.

Question: How much would you recommend?

Professor Selby: Heavy applications; I would run up the applications seventy-five bushels per acre.

Question: Air slaked?

Professor Selby: Well, in these days when nearly all of the lime works are grinding and selling the lime ground in barrels, I should for all fungus fighting prefer the fresh ground lime that can be drilled in or distributed more easily than slaked lime, because less dusty and more effective fungicide.

Question: Is that burned lime?

Professor Selby: It is lime that is burned and ground in a regular set of burrs; it is not slaked and it will keep about three times as long because the outer layer will slake and make a protection layer, so everybody prefers to buy it.

Question: Can this ground lime be used for preparing the Bordeaux mixture?

Professor Selby: It can.

Question: Slake it?

Professor Selby: Yes, of course; you would have to slake it, and I think it would be found to be an advantage because the grinding is generally a thorough one.

I will say just as illustrating the tendency of the lime trade that The Kelley's Island Lime and Transport Company went to the expense of perhaps from fifty to one hundred thousand dollars this year in rebuilding their grinding plant.

Doctor Chamberlain: The lime is granulated, isn't it?

Professor Selby: The grinding doesn't always reach that.

Doctor Chamberlain: Small granules?

Professor Selby: Small granules.

Question: I see that several take lime prepared for fertilizing purposes. Is that any different from the ordinary lime?

Professor Selby: If that means prepared to apply by drill, it may mean simply the ground lime.

When you go over to the other side of the lime question there are two things to be considered, if you will allow me to intrude them here and complete the discussion. The Fostoria lime is a magnesia lime, about half and half, lime and magnesia; the Kelley's Island lime is what they call a hot lime; it runs perhaps less than twenty per cent.—runs down even to seven per cent. of selected samples. If I were buying lime anywhere in Ohio as a fertilizer I would apply the one with the lower percentage of magnesia, always.

Mr. U. T. Cox: How about spraying, Professor?

Professor Selby: No difference.

President Miller: One thing in regard to Mr. Persing's report. I have been anxious for a good many years to know to what extent the English, or rather Persian, walnut is grown in Ohio and whether any of the bearing trees are here. I have on my place one tree that is ten years old and has stood a temperature of eighteen below with but slight injury and I think is going to grow successfully. And I also have a pecan which is six or seven years old, and I know of two or three Persian walnuts. One man near the lake shore has one that is bearing. I would like to know how many know of specimens growing in Ohio.

Doctor Merriman: I would say that on the Garfield farm in Lake County there are quite a number of trees growing of the English walnut and some have been bearing.

President Miller: They successfully stand the winter?

Doctor Merriman: Yes, sir.

Mr. J. H. Dayton: We have planted walnuts for several years; the largest one we have was twelve feet high; never had any to produce fruit, but there are several scattered over this state producing fruit, but I never heard of a pecan before that was bearing fruit in northern Ohio. Mr. Persing's statement in that regard is surprising to me.

Mr. F. E. Carr: As far as I am concerned I have some at my own place; planted perhaps five years; they are alive; I didn't ever expect to get them up to bearing size, yet, they may possibly. I planted pecans that lived through several winters, and then some changes in the place made it necessary to remove them and I did not transplant them anywhere else—threw them away. I do not think the English walnuts would ever amount to anything as a crop; I think they are winter killed too often.

Mr. Shively: We have in Ross County on the old Governor Worthing plantation several large pecan trees that are bearing. I saw bountiful crops on those trees. Of course that is farther south than you are here.

Mr. C. W. Montgomery: Last week I heard Doctor Ames, of Washington County, report that he had eight English walnuts on his premises and that they were doing well. They had not come into bearing yet, but they did not winter kill and were doing nicely.

Mr. Hunt: I have taken walnuts off from a walnut tree that grew in Euclid for a number of years, an English walnut on the Dille place. It has stood the weather there very well and is hardy.

President Miller: I believe that it can be successfully grown in Ohio, from what I have seen and heard, and I believe if the trees are protected for the first two or three years by slight wrapping they will successfully stand the winter.

We will now be favored with music.

Music by the Smith Sisters' Quartette.

President Miller: Is Professor Lazenby present? If not, we will take up Professor Selby's paper, "The Water Factor."

The Water Factor in Relation to Plant Growth.

Its Bearing Upon Plant Culture.

BY A. D. SELBY.

This paper is written to be elementary. It purposes to state over again the *a b c* of the water factor as influencing plant growth, in order to help practical men in the retention and conservation of soil moisture. I do not need to overstate the water relation to the growth of plants, because the demonstrated truth is strong enough to convince all who examine this truth. Plants require other things besides a water supply, yet the difference in the water supply may always be relied upon in culture to make the difference between a profitable and an unprofitable crop; certainly we always look to the crops we cultivate to yield profitable, not unprofitable, returns.

It has been demonstrated, and is generally accepted, that plants require certain elements for their proper nutrition and healthy growth, such for example as potassium, phosphorus, nitrogen compounds, iron and the like; aside from these, plants must have the elements of water, oxygen and hydrogen, utilized, however, as water, and they require likewise carbon, appropriating this carbon from the gaseous carbon dioxid found in the atmosphere and given off in animal respiration as well as in the combustion and decay of animal and vegetable tissues.

You are all familiar with the various parts of plants and with how these parts are placed:—the root in the soil of the earth's surface, the stem and leaves in the air which surrounds the earth. We may go a step further while speaking of the plant parts, and remind all that no matter whether the crop produced is tubers underground, as in the potato, or fruits on the branches above ground, as with apples, peaches, cucumbers, the actual construction work of forming these products is carried on by the leaves; the leaves you perceive everywhere in summer expanded as fully as they may be, in the air and light. These plants so situated may be bathed in the sunlight, obscured by clouds or deluged by rain and torn by winds, but the essential facts of the plant processes are not changed thereby. The root has also a work to do.

THE PLANT ACQUIRES WATER THROUGH THE ROOTS.

Aside from fixing the plant firmly in the soil and thus insuring that the parts will remain extended in the direction that light and gravitation have influenced these parts to grow, *the root* is distributed within the soil *to perform the function of absorbing water* containing the food materials dissolved in this soil water. The water absorption by seed bearing land plants, and this is the chief kind cultivated with us, is essentially a function of the root tips with their root hairs. Water to be taken up by the plants with which we are concerned must be absorbed by the new parts of the roots and therefore must be obtained from the soil in the form of soil water. This selfsame soil water carries with it in the form of solutions of these compounds, the dissolved salts which serve as plant food in conjunction with the water. We have here an introduction of the water factor in plant growth, namely, that of serving as plant food and of being as well the carrier of the dissolved substances for plant growth furnished by the soil. Various other considerations enter, however, in this water movement into and through the plant, and must be briefly considered.

The young root parts absorb water and this water so absorbed is distributed by osmosis, i. e., by passing through the wall of the cells, and by the process of equalizing the osmotic pressure this absorbed water may be placed within reach of most cells needing it; as for example, keeping the parts turgid or distended.

THE TRANSPIRATION WATER STREAM.

This is not all. The vascular, or wood bundle system of these plants is also a water conducting system and in a sense not widely different from the wooden pump log which descends into the well, furnishes the openings through which water may pass rapidly through the plant when a determining cause results in diminished pressure at some point. Just such a condition is brought about by the transpiration which is constantly going on by the way of the leaves through the stomates. These stomates are self-regulatory mechanisms by which the amount of transpiration is guarded. In answer to the water loss through the leaves, which in our fruiting orchards is certainly enormous, the transpiration current calls for more water through the root system. By transpiration the water is thus called to the tops of the highest trees, much beyond the point where the osmotic pressure or root pressure would insure a constant flow. Aside then from water absorption, or imbibition by the roots the transpiration current may be calling for more and more water at the leaf bearing points and thus increase the rate of absorption in a given time. This increase arises from the immediate realization of the absorbed water in the manner above stated. Please do not lose sight of this transpiration current, which in addition to its possible aid in keeping up vigor in remote parts and in regulating the temperatures attained in transpiring areas through converting the water into vapor, and heat absorption thereby, may be said in a sense to be the insatiable demand in response to which more and more water is absorbed by the proper root parts.

WATER ABSORPTION AND NUTRITION.

The bearing of this upon plant nutrition will now be apparent. First of all water is a food for plants as for ourselves and entirely aside from anything dissolved in it, constitutes a very large portion of the actual composition of plants. It is not often that this percentage of water in green plants drops below 50 per cent. and in fruits alone it often reaches 90 per cent. of the total weight of the parts considered. But in addition to this, water is a solvent for all available plant foods. And further the solutions of nutrient materials must be dilute; solutions of the same substances which are too concentrated may act very differently if by any means brought into contact with the root tips. It follows from these considerations that the *increase of the transpiration and of the available soil water* by equal increments *will increase the amount of dissolved food materials* brought within reach of the plants matabolic or building-up processes. It will follow that more growth is to be expected.

SUB-IRRIGATION AND NUTRITION.

Pause here for a moment and consider the bearing this has upon sub-irrigation in the greenhouse, which is assumed to be joined with no surface watering or sprinkling; sub-irrigation as carried forward in Ohio by Professor Green. Not only is an abundant water supply kept within reach of the roots by this method without great evaporation loss, but the tendency of the method toward a dryer condition of the air *increases the transpiration energy* of the plant and therefore the transpiration stream which goes through the plant. It follows as a corollary that the total amount of dissolved plant food is likewise increased. And from these considerations we can understand why, other things being equal, the lettuce plants upon the sub-irrigated benches grew so much faster than those in the surface-watered and walk-sprinkled houses, as practiced under the old greenhouse method. The plants had more food handed into them and placed where it must be disposed of in some manner. In what manner could it be better utilized than in increased growth. Another bearing is just as important, more important in a general way, even if somewhat less clear.

When we consider the case of an orchard loaded with fruit, but with the roots in an uncultivated and unmulched piece of grass land, we note that the grass transpires water and draws upon the soil water supply, but granted less rapidly than if not shaded by the trees. We note also that the fruit laden trees call for water through their "leafcry." But in case the demand for water is more than the soil supply warrants, what follows? The vegetables or crops, like corn, tobacco and other leafy growths, sometimes wilt in the middle of the day, thus showing that turgor is not kept up because there is not enough available water to keep the plant cells distended. This is especially noticed in the beginning of dry periods. Do we often observe the same phenomenon in the fruit trees? Possibly so on the peach but less likely so on the apple. The explanation does not lie in the less need of the apple tree for moisture. I have already stated that the transpiration mechanism, the stomates, are self-regulatory; the same is in a sense equally true of the absorbing root tips. In dry soil these show a modification which admits of less absorption. So while the laden apple tree, and this is equally true of the grass, may not show the apparent lack of turgor and consequent wilting which we may notice in some other cases, the tree's parts or leaves and roots of the grass, have none the less adapted themselves to the conditions of diminished water supply. The inevitable result follows with the apple crop; because of less water and plant food the growth is retarded and the crop reduced. Yet this may in reality be but half, or less than half, of the real loss.

RELATION TO CONSECUTIVE CROPS.

At the same time the apple tree is ripening its apple crop there is call made for food materials, including water and forms of energy to supply the incipient buds. *Who will assert that this lack of sufficient water and what is carried to the tree in this water, is not a frequent cause of the next year's fruit failure?* Says one, "The trees did not bloom much this spring; they had too large a crop on last year." It may be safely asserted that it is not usually so much the "too large" a crop of fruit as the too limited supply of water which is responsible for the condition. I admit that diseased foliage will not function as healthy foliage nor do its share of the work of preparing for next year's outlay of energy. This will explain the effects of spraying upon continuous crops of fruit, as in apples, because spraying insures healthy foliage when properly followed. In addition, we have the effect of scab upon fruit dropping in spring. *It is the insurance of adequate water and healthy foliage that makes crops possible one year after another.*

I call upon your fellow townsman, Mr. Vergon, as witness to this state of things. While I admit that some varieties, like Baldwin, have been so long in the habit of bearing a crop only on alternate years that the habit of "laying off" seems to have become fixed more or less firmly, it is not clear that good treatment will be lost upon even the recalcitrant Baldwin trees. Please note the true point is not varieties but water supply.

While I have drawn illustrations more especially from orchards, including the apple orchard, any late fruiting tree may furnish similar data. Kindly bear in mind before adjusting your thoughts to a wide range of crop features, that we must yet keep on a while longer till we trace the water factor home to its source.

THE SOIL WATER SUPPLY; HOW ACQUIRED AND HOW CONSERVED.

Now kindly recall that the soil water supply with us is obtained from that part of the 38 inches or more annual rainfall which is stored up in the soil; that in a wide sense our temperate crops are adjusted sensibly or insensibly to this rainfall supply of water for the plants. I have already made clear in the beginning that the plants are able to utilize the water in the soil, not to any marked extent that which may bathe the leaves. We now have squarely before us *the water factor from the soil side.* If this water supply is not conserved to the soil and to the plants the crop will be worthless.

This conservation involves the two features:

First, to insure that the soil will absorb and retain an adequate supply of the water precipitated; and

Second, to protect the water from evaporation loss after it has been absorbed.

While in practice the two features are interwoven, at least necessarily in the agencies employed, it will be well to discover how clearly each one sees the difference. How many of us will think either in silence, or thinking aloud, that the drouth was too long for us to carry our crop through?

How many will accuse the dry weather of coming too soon just after the cold, wet spring? How many will charge some particular piece of soil in being derelict with respect to one phase or the other? How few will ask rather, "Did I do everything I might in reason have done to increase the proper water holding capacity of the soil?" Take the problem right here and consider in how many ways may we realize the first feature, namely, that of water absorption, and in how many ways may we decrease evaporation and thereby conserve soil moisture? Don't forget that soil water was rainfall just before it became soil moisture.

Applying these considerations we wish to protect the soil from an excess of water just as certainly as we insure it against a deficiency. These features, other things being equal, are largely determined by soil character, soil cover and drainage. They are water absorbing or water rejecting aids. The former include mulches, whether of vegetable matter, plowed earth or something else. But granting eminence in the water acquisition, its retention by the soil, that is, its conservation within limits must intercede or the water will melt away in vapor by what we call evaporation.

WATER OR MOISTURE CONSERVATION.

This is my last theme. The soil water may escape by percolation, by soaking away through the earth, notably a source of loss in sandy or open soils, for example in stony subsoils, or it may escape by evaporation from the surface of the soil. Perhaps the water storage capacity of the soil can always be increased by manuring and by plowing down crops to change the soil texture thereby. This is assuredly a part of the water problem. Possibly the more common acceptation of moisture conservation is that of protecting whatsoever might be absorbed from evaporation loss.

Loss by evaporation obeys certain physical laws. The water must rise to the surface before becoming largely vaporized and lost in that form. This rise is facilitated by the water conductivity of the soil. Interpose between the soil surface and the air a mulch capable of retaining water and the desired result is attained. Interpose in like manner by cultivation a layer of soil, which the cultivator has fined, however thin this layer may be, and it serves essentially the same end. It may be simple to state in principle, but difficult to realize in practice, especially when we have behind us traditions of deep plowing, orchard cultivation, orchard cropping and a host of intermediary but nonessential considerations. Let these pass and face the real problem—that is, to retain and conserve the soil water. Secure these ends by mulching and the plant will show it by the use it makes of the water factor. Reach the same ends by cultivation where it can be done, and in many crops it can be done better and cheaper in this way, but don't confuse with this the real and vital proposition which is the water supply conserved to the plant's most wholesome use. Differ, if you must, on the question of how the water is to be conserved yet the plant will not discriminate largely between a supply conserved in one way and that retained in another. The water factor is a larger problem than even that of varieties. Give it the consideration it merits!

President Miller: Any discussion upon the paper?

Mr. Montgomery: I understood Professor Selby to say that the water is absorbed mostly by the root hairs and root tips; is there never any absorbed only by the root? I have noticed in buying nursery stock if we put it in water it will plump up in twenty-four hours. That is after the root hairs and root tips have been cut off.

Professor Selby: That is true, but there are plants that grow down under water. In making that point that is why I put the statement in the form I did. I did not forget there are plants which must get water by direct absorption, water plants, but limiting ourselves to growing land plants the amount taken in other ways is so small that it can be left out of consideration. There will always be enough absorbed through a cut stem to stiffen the plant, make it turgid again; but with plants fixed in the soil and roots in the soil that is so insignificant a factor that it may be entirely neglected.

Mr. Shirer: I suppose he did not forget what was said in Botany: "Only new and fresh roots can absorb moisture, and the newer the roots the more freely they imbibe." I believe that is about the way that is worded. I am sure I am glad that Professor Selby got on the right track at last. (Laughter and applause.) It is too often the case and has been in the past that these professors came up here with something that no ordinary man can comprehend.

Professor Selby: You have been growing.

Mr. Shirer: I am glad that he commenced at the very foundation. He said it was preparatory—

Professor Selby: Elementary.

Doctor Chamberlain: I would not discount any paper that Professor Selby has even given to this Society, but surely he never has given a more thoroughly practical and valuable one than the present.

It seems to me that in the briefest possible space he has brought together all of the practical and scientific knowledge on this subject down to date—all that is really worth knowing to us as practical men.

He doesn't say mulching is the only thing; he doesn't say cultivation is the only thing; he says get the soil moisture by whatever means is best and easiest for you under your circumstances.

I am glad that he spoke of that persistent habit of the Baldwin apple to bear so heavily one year, that no matter how much moisture and no matter how much plant food you may give it it will not bear the next year. I have been at work for ten years trying to give my Baldwins so much moisture and so much food that they will have to set fruit buds for the next year, and they won't do it. The Baldwins that bore this year won't bear next year, and not only do I cultivate, but I mulch on top of the cultivation. I get all of Mr. Vergon's method on top of all the other fellow's method and the Baldwin won't do it and if we can get it out of this bad habit I will be very thankful.

Mr. Hunt: We can get it out of its bad habit by thinning.

Mr. W. C. Harris: I have on my place a Baldwin tree that has borne a successful crop every year for sixteen years, but only on one side of the tree. (Laughter.) The way that came about was this. We had a bad storm that killed all the blossoms on the two limbs on the northwest and the other limb bore a full crop, and it has continued bearing on one side and then the other; so it has had a crop on one side of the tree continually. This year it is beginning to bear a little on both sides, but if it is a fact that the tree over-produces in trying to produce this year's crop, how is it going to set the buds for the next year's crop? It is a fact that the material that sets the blossoms and starts the fruit is deposited in the tree in the fall; it is already in the tree today.

Mr. Montgomery: In regard to that point of that tree bearing on one side and the other side not bearing, I would like to ask Professor Selby then if the food prepared in the leaves of one side goes down the tree and rises to the limb on the other side of the tree? (Laughter). Mr. Chairman, there is an important point there about this top budding of trees; what effect it will have.

Professor Selby: The gentleman who last spoke before Mr. Montgomery (Mr. Harris) made a point: namely, that the plant food, the energy of the bud at its opening time, is locally stored in the buds and adjoining parts of twigs, and it is not difficult to conceive what very marked difference there would be in the amount of storage taking place at the same time the fruit crop was being ripened on the one side of the tree. It does not necessarily follow because the water from the soil comes up through the plant and is evaporated at the leaves, that the amount of communication between the energy transformed—as Tindall used to say it—by the leaves on one side of the tree and the other side of the tree is distributed throughout the whole tree. I would not undertake to say how far it is a matter that is local and how far it is a matter that is general in woody plants. I think the case that the gentleman (Mr. Harris) cited is as good a proof as there is in the textbooks that it is largely local. In other words after close observation, I don't know of a single experiment in the range of the plant physiology that would be a whit better than the case cited, to go to prove that the stored up food by the leaves is deposited locally rather than distributed generally. I understand that to be the answer to your question raised.

Mr. Montgomery: Why will top working trees have any benefit?

Professor Selby: Do you mean a different variety?

Mr. Montgomery: That is on a Northern Spy; would it be because a Northern Spy had better root system?

Professor Selby: Because it is so relative to others, and only employed for a given aid in root system and trunk and branch. That it will in the long run make a difference is a matter for experimentation.

Doctor Chamberlain: Mr. Hunt will remember in passing through my orchard this year that probably forty Baldwin trees were exactly of the same sort that this man mentioned. The others bore last year.

I can give a more striking example. About 1896 I think it was, we had our severe May frost. My orchard is on a slope like this (indicating) and that frost cut to a certain line. The apples were as large as the end of your little finger. It killed them below that line; all the trees below that line had time to rest, and the next year they bore heavily. The part above the line bore this year and did not bear an apple the last. That is the habit of the Baldwin.

President Miller: No doubt but that this question is interesting and a profitable discussion, but we must take up our program.

Our next paper will be "Flowers and the Lawn," by Mr. L. B. Pierce.

Flowers and the Lawn.

BY MR. L. B. PIERCE.

The free use of flowers in lawn adornment is of quite recent practice and its literature is mostly unwritten. That flowers should have a place in every attempt at landscape improvement is a proposition for which we find analogies at every turn. The schoolgirl ties the braids of her hair with a bit of bright ribbon instead of a hempen string because it is more suitable and becoming. The harnesses of an expensive carriage turnout are fastened with polished buckles and burnished turrets because they are more suitable and in better taste than would be the rusty iron trimmings which answer for plow harnesses, and so it is through the whole range of utilities. Beauty goes hand in hand with usefulness. The grass seems greener and every day is brighter in dooryards where bright flowers are made to bloom. In studying the matter of decoration we will perhaps be surprised to find that the laws of art are always logical and in complete harmony with Nature's economy. This is strictly true in the matter under consideration. Flowers are ephemeral and costly as compared with grass and trees, the fact that they must be renewed often or from year to year being an important item in their cost. However, these attributes have their compensation in the fact that, being bright and showy, we can use them sparingly as we use jewelry and ribbons, and being but for a summer we can have a different lay-out each year. It can be poppies this year, marigolds next, and geraniums the year after, thus affording a variety which cannot be had with long-lived trees and shrubs. The biennials give us a year of growth and anticipation, and a year of bud and blossom and fruitage. The perennials give us something which, judged by logic alone, should be permanent, but in practice Nature's inexorable laws bring them to grief in a few seasons. They crowd themselves to death in the scramble of their vigorous roots for food. In practice it has been found that taking them up and dividing and resetting in a new place gives them new life and usefulness, and so the perennials fail to bear out their promise of a useful immortality. This is specially true of some of our choicest herbaceous and bulbous ornamental stuff. However, they carry a store of food in their heavy roots and we get considerable satisfaction the first year. The second they do fairly well and the third and fourth they are at their best. On the fifth they begin to deteriorate and warn us to give them pastures new. This applies more espcially to what is known as herbaceous stuff like the peony. Bulbs properly ripened and planted at the right time give us full returns the first year, but if neglected afterwards soon become but a shadow of themselves and finally refuse to bloom at all. Some tulips have come up annually in the edge of my lawn for thirty years, but never a bloom in all that time. A group of crown imperials came up for several years in a neighbor's garden, but did not bloom, it being between an overshadowing syringa and a Japanese quince. It was voted barren, but one was given to me and I put it in an open place and gave it cultivaton and was rewarded by a most splendid whorl or crown of flowers the following year. One of the strongest points in favor of giving flowers a place in ornamental work is that it gives us something to admire and fuss with almost every day of the growing months. The man with only some trees and bushes in his dooryard can hack and butcher a day or two in early spring and then wait for the next butchering season a year hence, but the man or woman who begins in March with the crocuses and ends in November with the chrysanthemums and anemones has pleasant recreation nearly every day, and is brought close to nature at every idle moment, and the great advantage is that if we do too much this year we can do less next, and if we get surfeited on geraniums this year we can dine on coleus or heliotropes next year. We get a dislike to a tree and dig it out; there is apt to be a yawning hiatus, and should we regret its removal afterward we can only replace it by waiting long years. Not so with the flower bed. If we fail to plant it we can sow it with grass seed and in a few weeks it will be part of the lawn, to be spaded again next year and once more be a brilliant mass of color if we so elect. The lawn may be likened to a becoming green dress which a lady wears this evening with flowers and tomorrow evening without it. It is beautiful in either case.

In using flowers in lawn decoration, taste, judgment and economy all come into play. Regard for the fitness of things is often shamefully disregarded because the owner or some member of the family have a passion for certain flowers and these are unsuitable for decorative purposes. Before deciding what and where to plant, a careful consideration of the dooryard and its possibilities and limitations should be undertaken. As a rule small lawns are kept neater and in better shape than large ones, and any flowers used should be neat and trim and of the highest quality, and if the lawn is quite small the flower beds must be limited in number and of quite small area. Let me give an illustration. A very small city lawn, about 25 x 40, cut near one side by a straight walk, was owned by a gentleman of taste. He kept it nicely and each year had a small bed of alternanthera planted. This is a dwarf plant of extremely brilliant coloring, growing about eight inches high, but may be kept sheared down to four inches without injury to foliage or brilliancy. The bed was oval and perhaps twice as large as a common wash boiler, containing perhaps three square feet. It required fifty plants three inches apart, and these a florist furnished and planted each summer for $2, which was a reasonable price. The man died and the place came under the care of a woman without taste or gumption. When springtime came the florist came around to get an order, but the woman demurred at paying $2 for such a "little wee bed." The florist said he could furnish twenty-five large geraniums for the same money, and calling for a little flower he traced a circle of about five feet as the bed which the geraniums would plant. The geraniums were ordered and in due time the bed was planted. The geraniums were rank growers, and the gaudy trusses of bloom were large and flaunting and of brilliant scarlet. The lawn was but fifteen feet wide on that side of the walk, so the bed was out of proportion and entirely too gaudy for the amount of grass it decorated. The walk divided near the house and a narrow part skirted the side of the house for a dozen feet or more leading to a porch at the side; between this walk and the foundation was a strip of ground a little more than a foot wide which the deceased owner usually planted to heliotrope and sweet alyssum. The new owner crowded into this restricted space a caladium, a tiger lily, some gladiolus, three rose bushes, some hollyhocks and some miscellaneous plants purchased at odd times from flower stands. The result of all this was an entire change of character to the dooryard, and although the lawn was mowed with scrupulous regularity and sprinkled and tended assiduously, the place had a gaudy, scraggy appearance far from pretty.

Very often a different arrangement of the same flowers or putting them in another place makes all the difference in the world. I have in mind a place which stands on a village lot of sixty feet front, with a vacant lot of the same frontage alongside. On the vacant lot is a vegetable garden which occupied the back end forward even with the house. In front of this is grass connecting with the lawn in front of the house. The continuous lawn is perhaps forty feet deep, and about twenty feet from the sidewalk on the vacant lot are three flower beds in a row. The largest is some eight feet across and for several years has been planted with a mass of old-fashioned cannas growing luxuriantly seven feet or more high. Around the edge is a border of either coleus or geraniums in a single row. The other two beds, about twelve feet distant on either side, are of geraniums and coleus. These beds are about five feet in diameter. In the center of the largest bed is a flagstaff some sixteen feet high, but I have passed a good many times and never seen a flag upon it. The vegetable garden is well tended, but, lik most gardens, outgrows its usefulness by the middle of August and runs up to garden grass and late weeds. It makes a very poor background to the lawn and flower beds. More than this, the flower beds being along the middle line of the lawn, fritter it away without any compensating advantages whatever save that they have a circular form and are regular in outline. Now there are about flowers enough in these three beds to make three rows along the front of the garden and hide the unsightliness of the matured vegetables, which are most in evidence in August and September when the flowers are at their best. Placing the cannas at the back with a row of geraniums and one of coleus in front, they are all as easily seen from the road or lawn as before, and they form both background screen, and border for the lawn, which being in one piece, is much prettier and much more easily kept in order. More than this, the garden itself could be made a background. A row of large Chilian beets with their showy and magnificent foliage could be planted next to the cannas, with a row or more of sweet corn behind the beets. By the time the cannas hid the beets the sweet corn would be tasseling out and would do duty as a background and a very pretty one at that. Later on when the sweet corn began to deaden and look unsightly the tall cannas would hide it and thus the whole arrangement would dovetail with itself and the season.

The use of corn as part of a mass of ribbon planting is not original with me. One of the most effective pieces of ribbon planting ever put out was to be seen at Glen Island in New York harbor a few seasons ago. The carriage drive swept in a long curve around a field of several acres of sweet corn and on the edge of the corn was a double line of cannas with a row of salvia and one of geraniums in front. One row of cannas was Black Beauty, and the effect was magnificent, the corn toward the close of August when I saw it being in full bloom.

If we study the best specimens of flower bedding for ornament in our large public parks and most up-to-date private grounds we find that all tall weedy, stalky and irregular growing flowers are planted in borders, and if the grounds are large in considerable masses of one sort together. The bedding plants as tractable, bushy plants like coleus and geraniums, and some twenty other sorts are generally grouped in a large carpet on grounds much lower than the lawn. In this way we see the bright colors from above, and can take in the whole effect at a glance. Some famous gardens of this kind are to be seen in mid-summer at the Soldiers' Home in Dayton, Ohio, and at Lincoln and Washington Parks in Chicago. This subject is a voluminous one, and I have scarcely touched upon the most important points, that of varieties and their special fitness for special places, but I promised the Secretary that this paper should be short and I must close. However, allow me to urge each of you to study for yourselves and begin to practice this very next spring. Begin at the outside of the lawn and plant sparingly and in masses, and do not cut a bed into the body of the lawn until you have considered the matter carefully and seen some example that pleases you and would fit your grounds.

President Miller: We will next have a paper by Professor S. A. Beach.

The Pedigree Question.

BY PROF. S. A. BEACH.

The pedigree question is being much discussed by some nurserymen and fruit growers.

What is there in it? Do plant pedigrees have the significance which some attach to them? Is it of any advantage to the fruit grower to set out pedigree strawberries, pedigree grapes, pedigree peaches or pedigree apples? Is there any such thing after all as a pedigree Baldwin apple or a pedigree Crescent strawberry, or a pedigree plant of any cultivated variety which is not propagated from the seed?

Before entering upon the discussion of this question it is well to inquire what is the proper meaning or use of the word pedigree? This word has long been used by breeders of animals to signify a line of descent from known ancestors. In such a case each individual is joined by blood relationship to the two immediate parents and through them to the four grandparents, eight great-grandparents, etc. There certainly can be no objection to a similar use of the word in speaking of plants. However, in the popular discussions by nurserymen and fruit growers above referred to the term plant pedigree is seldom used in this sense, but is usually applied to plants which have been derived from one original seedling plant by asexual propagation only, i. e., by scions., cuttings, etc. At first thought one might be inclined to question whether such use of the term pedigree is strictly accurate. The term "selected strain" would express the idea correctly. But it is not our purpose to enter into controversy over the meaning of these words. "A rose by any other name would smell as sweet." Let us rather examine the ideas for which they stand for the purpose of inquiring to what extent these ideas are supported by the facts.

Before entering upon the discussion of the subject before us it would be well to define some of the terms which we shall find it convenient to use. Reference has already been made to the fact that plants may be propagated by two methods, the sexual and the asexual.

The sexual method of reproduction results in the development of the seed. When the seed germinates it forms a new plant. The seed is formed as a result of the fertilization of that portion of the flower which is called the ovule or egg-cell. If a flower from any of the common orchard trees were examined it would seem to consist of (1) small green leaves on the outside or underside of the open flower called the *calyx;* these were the green outside leaves in the bud; (2) the showy leaves of the flower called individually *petals* or collectively the *corolla;* inside of the corolla are the essential organs of the flower. The calyx and the corolla are not essential organs because it is possible for the blossom to develop fruit even though these should be removed before it opens; (3) the stamen is a slender, thread-like organ at the outer extremity of which is a minute sac, commonly yellow. The sacs are filled with a powder consisting of minute grains called *pollen* grains; (4) the center of the flower is occupied by the *pistil* or pistils which finally develop into the fruit. The tip of the pistil is soft and sticky so that it may catch and hold any of the pollen grains which happen to alight upon it. The transfer of the pollen to the pistil in this way is called *pollination.*

After pollination occurs the pollen grain germinates and sends out a sprout in a way analogous to that in which seed sprouts in a congenial soil. The sprout from the pollen grain grows down through the soft substance of the pistil till it reaches and fertilizes the egg-cell. After fertilization occurs the egg-cell develops into seed. If no fertilization takes place no seed is formed. Fertilization which is affected by pollen produced by the same flower as that which bears the pistil, or by the same plant, is called *self-fertilization.* It should be noticed in particular that in plants both the male and the female parents are often united in one individual. That fertilization which is effected by pollen from another plant or, speaking of cultivated varieties, from another variety, is called *cross-fertilization.* Cross-fertilization is brought about under natural conditions by the transfer of pollen from one plant to another through the agency of winds or insect visitors.

By the asexual method of reproduction plants are propagated by cutting off or separating some part of the original plant such as bud, cutting, scion, runner, offset, etc., and growing it as an individual plant. Cultivated varieties of fruit are commonly propagated asexually. In fact it is seldom that any of them are bred so that they will come true from seed even when the seed is developed as a result of self-fertilization. For example, among vines grown from the seed of Concord grape some will bear white fruit, while others may bear black fruit. The fruit may be larger or smaller, or earlier or later than that of the Concord. It is an interesting fact that although thousands of vines have been grown from Concord seed, there is no record yet of one which resembles the Concord closely enough to pass under the Concord name. No cultivated varieties of the apple are known which reproduce true from seed. When a new variety of fruit appears which possesses sufficient merit to make it desirable to introduce it into cultivation it is commonly propagated asexually. Thus all of the Concord grape vines which are growing today have come directly or indirectly from the original Concord vine grown from seed by Ephraim Bull in Concord, Mass., more than fifty years ago. Likewise all of the Baldwin apple trees which are growing today have come directly or indirectly from buds or scions taken from the original seedling tree in Massachusetts. Plants which are grown by asexual methods of propagation commonly hold the distinguishing characteristics of the original plant, or at least to such an extent that they can all bear the same name without confusion. For example, when the word "Baldwin apple" is seen or spoken it brings to mind the idea of a particular kind of fruit having certain distinguishing characteristics which are recognized by fruit growers and fruit buyers throughout the country although the original Baldwin tree perished nearly 100 years ago.

There are also cultivated varieties of plants propagated by seed which come true to name from seed. As for example the Grand Rapids lettuce, the Dawson Golden Chaff wheat, the Stowell Evergreen sweet corn and other grains and vegetables which are propagated under varied names. It is either not practicable or not possible to perpetuate such varieties from year to year by asexual methods of propagation. In such cases it is necessary to fix the type so that the plants will come true from seed before it can properly be named as a distinct variety.

ORIGINATION OF NEW VARIETIES.

We have seen how plants are propagated. Let us next inquire how new varieties are originated. We notice first that they may be originated by sexual reproduction, i. e., from seed. They may come from mongrel stock as chance seedlings which are selected and propagated by someone who discovers that they have sufficient merit to make them worthy of being introduced into cultivation, or from seed which has been selected because of the excellence of the parent fruit or parent plant, as for example when one plant seeds from the largest and finest colored fruit of some favorite variety of apple in the hope of getting an improved variety in some of the seedlings. Or they may be produced by crossing one variety upon seedlings containing excellencies of both parents. In any of the cases mentioned above should a desirable seedling be produced it is an easy manner to perpetuate the variety if it belongs to any of those kinds of plants which are propagated asexually, as we have already seen. But if the new variety belongs to any of those kinds of plants which are commonly propagated from seed it becomes necessary, as before stated, to fix the type before it is safe to disseminate it under the name of a new variety. This is done by growing generation after generation from the seed and rejecting all plants which vary from the desired type. This is a process which is familiar to seedsmen; by them it is called "rouging" the plants. With some plants the type may be fixed within a very few generations, while with others a considerably longer period may be required.

SEED SPORTS.

Among fixed varieties there may appear suddenly a plant quite distinct from the type. Even when a variety has long been known in cultivation and its type has become permanently fixed such plants may arise. Such plants are called "seed sports." In this way certain dwarf lima beans have originated from pole lima beans and certain dwarf sweet peas from taller growing varieties· If one should desire to perpetuate a seed sport it is quite probable that it would be necesary to go through the porcess of fixing the type.

SELECTED STRAIN.

We have seen that the seed sport arises as a sudden variation from the fixed type. In other cases variations from the type may be developed gradually, as has been done in the cases of many selected strains advertised by seedsmen. I have in mind a certain neighborhood in which the gardeners are growing a peculiar type of lettuce for which they have no special name. They are engaged in forcing lettuce and grow their own seed. More than a quarter of a century ago they started with a standard variety. Gradually by propagating through all these years only from plants which showed some tendency to develop in a certain desirable direction they have produced a strain which is in some ways distinct from the original type and which suits their particular purpose much better. Plants of those types which have been developed in this way may properly be called pedigree plants. Numerous other instances of this kind might be cited had we time to consider them.

We have seen that under the sexual methods of reproduction new varieties may be obtained either by selecting chance seedling or seedlings of a known single parent or by cross breeding from distinct parents. We have seen also that among fixed types new varieties may be developed from suddenly appearing distinct variations called seed sports, or they may be produced by gradual processes as in selected strains.

Let us next inquire whether new varieties may originate by asexual propagation.

Graft Hybrids.—Are new varieties ever produced asexually which correspond to the hybrids produced under the sexual method by cross-fertilization? Claims have sometimes been made that it is possible to produce new varieties by grafting which are entitled to be called "graft hybrids." The work which Daniel has done in France demonstrates that this has been done.* As a matter of fact, however, it is universally conceded that graft hybrids are exceedingly rare.

Bud Sports.—Bud sports are well known. They correspond to seed sports in that they appear suddenly. They usually show permanent characters when propagated, entitling the sport to be called a new variety, yet some bud sports prove quite unstable when propagated. Numerous instances in which new varieties have originated as bud sports are found among ornamental plants and they are not unknown among orchard fruits. More than one case is known where bud sports have appeared on the Concord grape. I am perfectly familiar with one instance of this kind. From a bud near the base of the main stalk of a certain Concord vine there has arisen a cane which for many years has borne clusters with fewer but much larger berries than those that are produced on the typical Concord cluster borne on other portions of the same vine. Seedlings which have been produced from self-fertilized seed of this Concord sport differ in a marked degree from those produced from the self-fertilized seed from typical Concord fruit borne on other portions of the same vine. Among other instances of cultivated fruits which have originated from bud sports are the Collamer Twenty Ounce and the Banks Gravenstein apples.

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*Expt. Sta. Record 11:343.

Selected Strains. There can be no doubt that it is possible in some cases to develop under asexual propagation selected strains by a gradual process of selection of the propagating wood. This process corresponds to the development of selected strains grown from seed. In this way varieties of the pear which in the original seedling tree were armed with sharp thorny spurs have been changed so that it may be truly said that the thorns have been bred away. In a like manner thorns have been bred away from certain cultivated varieties of the orange. Galloway, who has given much attention to the growing of violets, states* that the violet is a plastic organism. "Different plants from same source behave differently. To be successful a man must work persistently to develop plants to fit the conditions which he can provide. Left to itself the tendency of the violet is to retrograde. By proper selection and right cultural methods the yield may be raised from fifty flowers to 100 flowers per season in three years."

From all that has been said it appears that new varieties may be produced sexually in seed hybrids, asexually in graft hybrids; sexually in seed sports, asexually in bud sports; sexually in selected seed strains and asexually in selected bud strains. Perhaps after all we must admit that our friends who apply the term pedigree stock to plants propagated asexually have some show of reason for such a use of the term.

But let us look into the question of the variation of plants a little further. It must be admitted that among plants that are asexually propagated the term pedigree stock cannot rightly be used as indicating that the distinctive features of the plant from which the pedigree buds or scions or propagating wood is taken are capable of being transmitted in the bud so that they can be depended upon to appear in the so-called pedigree plants. This leads us to observe. that among our fruit bearing plants, so far as is known, this is a comparatively rare occurrence. There are many, many cases in which it is supposed to occur where the fact has not yet been demonstrated. We should not lose sight of the fact that many of the differences which different orchard trees show in habits of growth and productiveness; in the size, color and quality of fruit produced; in resistance to disease and in other ways, may be satisfactorily accounted for on the ground of differences of environment. Take for example the case of certain apples which are known to attain their highest degree of perfection in certain regions, whereas in other regions they do very poorly, and this occurs regardless of where the plants of the particular variety in question were obtained. The Fameuse attains remarkably high color and quality along the shores of Lake Champlain and in the St. Lawrence valley, whereas when grown in many sections of western New York it lacks in both color and quality. This holds true in so many individual trees and in so many different orchards in the regions named that it is impossible to account for it on the assumption that it is due to differences in the buds from which the stock was propagated. Many other instances of this kind might be cited.

Those who have opportunity to compare the Baldwin apples which are grown on the Pacific coast with those which are grown in New England and New York have observed that they are distinctly different from the Eastern grown fruit, being decidedly elongated. The Baldwin trees which have been shipped from Eastern nurseries to Washington and Oregon are grown from buds and scions taken from widely separated sources. The peculiar form of the fruit which is grown in those regions cannot be accounted for on the supposition that the buds from which the trees were propagated all came from a bud sport of the Baldwin. It must be attributed to a characteristically local difference in environment. There are many other differences which are observable among orchard varieties in habit of tree and color of fruit which are known to be due only to differences in environment. Such differences in tree or fruit cannot be expected to be transmitted by propagating.

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*Galloway, B. T. Violet Culture 109-116.

What reply shall we make, then, to the question as to whether or not it is good policy to follow the pedigree idea in securing stock for planting in the orchard? If one happens to know of an individual tree or of a particular orchard showing superior characteristics of tree or fruit is it desirable to propagate from such a tree or from such an orchard rather than from one which does not show such superiority? Certainly it is desirable. Although we may not be sure that anything can be gained by so doing, yet we feel that we are on the safe side, at least, and that possibly we are making progress in the right direction.

The question is often asked whether it is desirable to pay higher prices for the so-called pedigree stock than for the ordinary stock of the same variety. If one can be sure of the pedigree and know that the desirable features which it stands for have been transmitted by propagating from this stock, then I believe it would be good economy to take such stock at prices in advance of those which are charged for the ordinary stock.

In conclusion I would sum up the whole question by saying that plant pedigrees of the right kind are worth paying for, but before paying for them it is well to be sure of the pedigree.

Question: I would likt to ask the Professor if he meant everything in connection with this climatic effect.

Professor Beach: Undoubtedly; by that word "environment," I meant to include everything—difference of season, difference of cultivation.

Mr. Pierce: May I ask a question? Take an illustration. I have some twelve hundred lettuce plants that are seedlings, but these were not from selected seed. Three varieties of seed are growing together and I found in September I had a nice lot of plants. I see there is a great difference in these plants, but there is also a difference in Grand Rapids plants that stand in the same house in different parts of the same bed, because of a difference in fertilizing qualities.

If I, in growing strawberries, pick out a hill here and there and grow from them isn't it the same case? If I select some of these lettuce plants to grow seed from am I sure that I will get a new variety?

Professor Beach: You know the proof of the pudding is in the chewing of the string. If you do get an improved strawberry you have got the improvement and if you have got it it is worth buying and worth paying for, but you are not always sure you have it; I should want proof.

Does that answer the question?

Mr. Pierce: One strawberry plant is as good as another according to your answer. Suppose I had a Crescent strawberry and I find certain plants that are good and I propagate from the good plants and I do that for five, six or seven years, and I fruit it and I know that I am leading it along the line of improvement; then I am willing to pay more for those improved Crescents; I look upon that as an improved strain of the Crescent. But unless I have such evidence I am not willing to pay for it.

Doctor Chamberlain: That is, you must test the supposed pedigree plant.

Professor Beach: Why, I would do just the same as Doctor Chamberlain would do if he was going out to buy a Jersey. There are lots of Jerseys and he would examine the pedigree carefully before he paid out his good money.

Mr. Merriman: If in grafting or budding, you take Baldwin and bud or graft upon seedling stock, won't you get a great variety in the quality, in the color, in the flavor and taste of Baldwins? I think if Doctor Chamberlain should go through his orchard—the Baldwin—with a stranger, that he would pick out a great difference and Doctor Chamberlain would tell him they were all Baldwins, yet the flavor and quality would be very much different.

Professor Beach: In some instances I think it is recognized that the kind of stock does have some influence upon the kind of fruit which we get, especially as to size. We might get for instance pears on quince stock that will average better size. I think the Duchess pear and the Angeline pear will average better size, but this is different when you put a tree into the ground and bring it into bearing; there is this question of water supply and there is the question of management and of individual character of the soil where that stands, as well as the question of the influence of the stock. My own personal opinion, based on general observation of the hundreds and thousands of Baldwin trees that we see growing from here to the Hudson River, is that there is a great deal more in the way that a tree is managed and in its location and the way it is fed and pruned and all those things than there is in the picking of your stock that it is propagated from.

Mr. Farnsworth: The Baldwin has been spoken of frequently, and I believe that is only an example of the high esteem in which it is held in this state. I have not the statistics, but I presume that more bushels are produced of it than any other variety. Consequently if we would secure an improved Baldwin it would certainly be a great advantage.

An old schoolmate of mine residing at Olympia in the state of Washington has been telling me that they have in that state an improved Baldwin. I don't think anybody has a corner on it. At my request he sent me a sample of these (exhibiting apples) and also samples of two or three other leading varieties, Baldwins, Greenings, Spy and Ben Davis, for comparison. This is a sample of the Olympia (exhibiting same) as it has been named, which they describe there as being an improvement, in color, quality, and general habit of the tree.

Doctor Chamberlain: Are those true Baldwins in flavor?

Mr. Farnsworth. I have not tasted them. These are the largest I have ever seen mature; I would be glad to have them examined.

Mr. Freeman: I have here one of the specimens of Mr. J. L. Budd, who was on the commission to Russia to select a new variety of apples. I planted it and watched it carefully and this is (exhibiting same) the only variety that has reached us. I should be pleased to have you test it and tell me whether it should be added to our catalogue of varieties or not. I think it very fine. It has been growing along the fence rows, not under high culture. It has a wonderful growth; and bore about five bushels.

Professor Beach: What is the name?

Mr. Freeman: It came to me under number. I had twenty varieties and out of that number only one has reached us here so far up into the winter season. I call it Russia now.

Mr. Crawford: I would like to ask Professor Beach if he has found it possible to develop new characteristics in fruit by any special kind of pruning or cultivation; whether he can prune out of a variety certain characteristics; whether by any special operation continued from year to year he can improve a variety that has nothing about it of that characteristic to start with?

Professor Beach: Well, if I understand the question correctly, it is to what extent you can influence the quality or other features of the fruit by your methods of pruning. Is that right?

Mr. Crawford: That is part of it; not all.

Professor Beach: This question of quality is one of the complex problems which fruit growers have to confront. There are many factors which enter into it. By watching the tree and by having in mind the particular condition of the tree which in your opinion puts it in the best working order, and by such methods of training as will help to get it into that condition, I think it is possible for you to develop a better or a larger fruit than you would develop under neglect. I do not know as that answers your question.

Mr. Crawford: Take the strawberry. You were speaking of that a moment ago. Have you ever found any of these pedigree strawberries that you were sure had been improved by any treatment?

Professor Beach: Well, I have not had the opportunity to watch very many of them, but I have noticed this, in working with strawberries of one variety, as for example Glen Mary, you will find a difference in the strawberries of that variety, and a difference of the fruit, perhaps, on the same plant. I look upon the strawberry as quite variable and the question would come up in my mind whether it would be easier or cheaper to get the desired improvement that you wish by working selected strains or by looking to new seedlings for them.

In the matter of the carnation to which I referred just now, that thing has been worked out in a way that is quite striking. In the vicinity of

Philadelphia they have been growing carnations for twenty years or more with the idea of working up the highest degree of perfection; while Hill in Indiana, and Ward of New York, have been working on the line of hybridizing and producing new seedlings and these people in Philadelphia are so far behind they are out of sight. We are looking now to Ward and Hill and those men for our new and best carnations.

And so the question would arise, not what it is possible to do, but what it is profitable to do, and I would expect it would be easier to get the desired improvement through the new seedlings.

Mr. Crawford: There was much in this paper that I wanted to find out; in fact, this was the paper I wanted to hear more than anything else at this meeting. I have a good many questions I want to ask and I know I haven't time, but I do want to ask this: Suppose, now, that a man had a field, and had a horse die or two horses die, and he would bury them in the field, and in the course of three or four years somebody else might come on that farm and plant an orchard and plant one tree right over where these horses had been buried. That would be a more vigorous tree; it would have a better opportunity than the other trees. If you took scions from that tree and used them to propagate would you get any different stock or any difference in improved variety over and above the other trees in the same field?

Professor Beach: Well, that brings up the question whether or not by high feeding and high culture it is possible to induce variation. That is the way we horticulturists state it.

Doctor Chamberlain: It is the more promising?

Professor Beach: It is the more promising.

Mr. Crawford: Suppose we have a strawberry plant every twelve or fifteen inches and a man should bury a mouse under one of these knolls; that particular plant will be more vigorous than any other. Now a man that has a good deal of faith or at least makes a good deal of profession about the pedigree business, would say, "Well, now, there is a variation," and he would take that up and set it off and propagate it. How much would his customers gain on account of the pedigree of that plant. (Laughter.)

Professor Beach: It seems to me that some of these questions are answering themselves. I can only give the same answer that I did to Mr. Pierce; which is along the line of the Apostolic injunction of proving all things and holding that which is good.

Dr. Chamberlain: The propagator wants to sell that which is good, and not hold it.

Mr. Hunt: I grafted, or budded, rather, some Bartlett pears to some Duchess; the Duchess were on a quince, and I got fifteen cents a basket more for those than I did for the Bartletts on the Bartlett stock; they were much finer; better in quality and better every way and changed the character a little in the Bartlett.

President Miller: It has been suggested at this time we have a report of the Obituary Committee.

Report of Obituary Committee.

Memorial of Nicholas Ohmer.

BY PROF. W. R. LAZENBY.

The Ohio State Horticultural Society, wishing to voice the feelings caused by the death, and preserve in some permanent form a simple record of the life, of its late member and friend, Nicholas Ohmer, has prepared the following memorial:

For nearly half a century the name of N. Ohmer has been intimately associated with the horticulture of Ohio.

A native of France, he came to America with his father when a child, and in 1837 the city of Dayton became his permanent home.

For some years after reaching manhood he was engaged in various business enterprises, but failing health admonished him that if he wished to enjoy a full measure of strength and vigor, he must seek the free air and invigoring sunshine of the country. Thereupon he moved from the center of the city to a farm on the adjacent hills and began the cultivation of fruits, especially pears and raspberries, a work in which he was eminently successful, and which was continued in a commercial way until the growth of the city impelled him to divide his land into town lots. Although this restricted the scope of his horticultural operations, in a lessened way, he lovingly continued to work with fruits and flowers until his death.

Mr. Ohmer was a man of royal parts. An enthusiast by nature he had the wisdom of the man of affairs. His serene temper, his good judgment, his promptness in action, together with a genuine manliness of character won the respect and esteem of all who knew him, and exercised a weighty influence in all organizations with which he was connected.

As an associate his cordial sympathy attracted all who came in contact with him, and held them in the bonds of an ever increasing affection.

A devout Catholic in religion, he was tolerant and liberal. He believed that "above all sects is truth" and "above all nations is humanity."

He had many friends because he showed himself friendly. In all the relations of life he moved upon a high plane, and exemplified the better qualities of our nature.

To such a man honors naturally come, and honors did come to Nicholas Ohmer.

For 35 years he was the beloved President of the Montgomery Co. Horticultural Society, the first and only President until after his death. During this long tenure as chief executive no one ever thought of disputing his perfect right to remain as its directing head. He served 12 years as Treasurer, 20 years as Vice President and 4 years as President of the State Horticultural Society. He was a member of the First Board of Control of the Ohio Experiment Station and continued a member for three years, during the whole of which time he held the office of President. He served 5 years as member of the State Board of Agriculture, and held many other positions of trust and responsibility. Mr. Ohmer died Feb. 27, 1903, at his home in Ohmer Park, Dayton. Had he lived until the following April he would have been 80 years old. Although his strength had been failing for some time his condition was not regarded as serious until a few days before his death, which was caused by a rupture of a blood vessel in the brain.

black-cap raspberry was perfectly at home. With strong, heavily-rooted, home-grown plants, thorough preparation of the ground, good culture the first season in order to get the plantation well established, and a very simple system of severe annual pruning, it was found that they would practically take possession of the ground, come very nearly taking care of themselves for six or eight years and bear heavy, annual crops of fine quality. At the expiration of this ample term of profitable fruit production the blue-grass would be creeping in and flourishing upon the soil which, had the hillside been under cultivation season after season, would have long been producing corn, wheat and potatoes for the "other fellow" down in the valley of the Licking river. And when, in the necessary rotation, the canes were cut off and the area plowed, the soil would be so filled with grass-roots, and the surface so covered with decaying vegetable matter produced by the annual growth and fall of foliage, and by the crumbling accumulation of the old canes and the few weeds which were regularly clipped out and trodden down, in a narrow line just at the upper side of each row, that it was comparatively safe from serious washing by heavy rainfalls until some other crop could be established. In this connection it may well be stated that one of the most valuable lessons we have learned from experience is, never to break up a steep hillside unless the soil be full of fibrous roots or the surface well covered with vegetable matter of some kind to hold the soil from washing away while it is under cultivation.

We may reasonably expect that the man who has comparatively level ground will criticise any method that does not embrace clean, annual cultivation of the raspberry plantation as well as of the garden and orchard; but we have had excellent success with black-caps, and have heard that Mr. Vergon and Mr. Hitchings even grow a few apples without intensive stirring of the soil.

Clean cultivation of the raspberry field, however, is a commendable plan on comparatively level ground, and in some localities it is necessary, if for nothing more than to preserve one's self-respect as a modern culturist—even if he get no greater returns than his neighbor who works under widely different conditions upon the hillside just above him.

Where the slope of a hillside approaches an angle of from 35 to 40 degrees, as does the one upon which we planted 2,000 black-caps last spring, cultivation is not accomplished by inspiration alone. Finding it next to impossible to hold a steel-frame, five-hoe cultivator up against the hill within the 3½ foot rows formed by the intervening rows of sweet-corn, during the first cultivation, with the horse walking in the same row, we hit upon the plan of attaching a double-tree to the same cultivator, hitching on two horses, driving astride of the row and cultivating the space in which the lower horse walked. This held the cultivator up to its place, and while the plants were small, did very well. Succeeding cultivations were given with a single horse, as the ground, from the first cultivation, became somewhat "terraced" and less difficult to work.

We choose the steeper ground for raspberries for the reason that they seem to thrive especially well, and can be more easily, cheaply, and safely grown upon such a location than those crops that demand continual cultivation and frequent rotation with other crops.

We prefer either to set the young plants very early in the spring, before the tender shoots have started to grow, or at a time later on, when they have attained the height of from 4 to 6 inches. If the plants be handled just as the delicate, tender shoots are starting or pushing up through the heart by our words of appreciation. We have had in the past many good men and true in our Society and still have them, but we never have had and never will have but one Nick. Ohmer.

Mr. Freeman: For a half century I have been familiarly acquainted with Mr. Ohmer. His name as a horticulturist always stood among the first. When you visited Mr. Ohmer he always had a warm hand to welcome you, and we felt that we were always at home when we were at Nick Ohmer's.

Secretary Woodard. Perhaps it will not be out of place to state to the Society what was done with the money that was raised for a special present to Mr. Ohmer. You will remember the Society voted fifty dollars from the treasury as a token of its esteem; and in addition to that a private subscription was raised for a special present to be given him after. Twenty-three dollars was raised and the money was given to me to select the present. I went to Cleveland and purchased a solid silver berry dish, with instructions that it be sent to Mr. Ohmer by express. With the letter stating that I had sent the present I enclosed the list of names of the persons who contributed. In the reply that Mr. Ohmer wrote me was a phrase that is very characteristic of him, and you will all recognize it; it was this:

"I will always preserve this list as long as I live, *you bet.*"

Mr. Pierce: Mr. President, it is difficult for any of us to exactly figure up the amount of good we are doing in the world, or what the effect of our actions will be, but I think in Mr. Ohmer's case we have a wonderful example of what observation and education along horticultural lines have done for this country, at least in one line. Mr. Ohmer's quick insight into fruits and his practiced eye led him to find the Gregg Raspberry, and introduced it to the public; and I do not know as any member of this Society has done more for horticulture than in that one act. It revolutionized raspberry culture; it made the shipping of raspberries over long distances possible, and has done more for raspberry culture than any other one thing, and there is still room for the younger members of this Society to do something along the same line. I think one of the best memories Mr. Ohmer left to keep his name before the world was the Gregg Raspberry.

REMARKS BY A. SHIRER.

Mr. President: Mr. Ohmer was naturally of a genial disposition. And yet he found very little time for so-called visiting. He freely imparted to others the horticultural knowledge he possessed. Besides being president of the Montgomery County Horticultural Society for more than a third of a century, he also was for many years president of the Farmers' Club of Montgomery County. He also took an active part in organizing the farmers' institutes of the county.

Professor Lazenby said that Mr. Ohmer was a devout Catholic, yet of a liberal spirit. He also took a great interest in the public schools of his subdistrict.

After the plantation has become thoroughly established by the first year's careful culture, weed growth, upon our ground, is not at all troublesome; the few that intrude being clipped out with a grass-hook or short-bladed scythe previous to berry harvest. By that season of the year the ground is so shaded by the dense growth of foliage that the plantation remains quite clean during the balance of the season.

As to varieties, the old Gregg has done remarkably well among the hills of central Licking County, and was, until recently, our most valuable variety. It was not until the introduction of the Cumberland that it was superseded in any way. The Munger is very much like the Gregg, a little later, and last season was, from some cause, very hard to pick. The berries clung so tenaciously as to cause them to crumble or to bring off a short bit of the stem with them. The Conrath, with us, is one of the very best early sorts we have tested. The berries are of large size, a glossy, jet-black color and of good quality.

President Miller: Any questions you desire to ask Mr. Ballou?

Mr. Cushman: I have grown a few raspberries, and outside of getting my first start of a dozen or so plants I have always set my own plants, as Mr. Ballou speaks of, after they have grown four or five inches. I know that raspberry plants are sold in large quantities. I want to know if anybody plants eight, ten or fifteen thousand, or even fifteen hundred of these commercial Black-Cap Raspberry plants, and if they meet with success in doing so?

President Miller: Let us hear from Mr. Dayton.

Mr. Dayton: We sell them; we don't plant them ourselves, and we have very little trouble; we sold twenty-five thousand to one man; if they hadn't done fairly well we would have had a kick—we generally do. We have no particular trouble in sending out Black-Cap Raspberry plants.

Mr. Harris: I have had good luck in setting black raspberries, and I have had poor luck, even with my home-grown plants, where I have more or less help. The raspberry plants start very early in the spring, and the sprout of the raspberry when it gets about so long (indicating six inches), breaks about as easy as the sprout of a potato, and if you have a careless man planting there is a lump of dirt thrown on them, and it breaks the sprout, and instead of coming up one good, strong, healthy shoot, you have a dozen or two, and what do they amount to? I presume the nurseries are alike; that is, they buy a great many plants from a grower, they are chucked into a box, tumbled around in the nursery, chucked out of the wagon into a little box, and tumbled around on the railroad awhile, so when a man gets them if he gets half of them to grow I think he is in luck. This has been my experience right on my own place, as well as seeing them handled. A man, as a rule, who wants to set out black raspberry plants will send for a few and raise them; that is the way I should do.

Mr. Farnsworth: I don't think there is any trouble in handling black raspberry plants if the roots are kept from the air and the cold.

Mr. Scarff: I thing the Black-Cap Raspberry can be grown very successfully in large quantities as well as small. The only secret there is in it is getting your plants early and getting them planted early; before the growth starts in the spring, or allowing them to grow until the young growth is six or eight inches high, and then transplant them.

Mr. Shirer: Is there any danger of covering too thick when you plant in the spring?

Mr. Scarff: Oh, yes; never cover over two inches deep, and as the young growth starts, draw the dirt in from the sides of the furrow as it grows, and give level cultivation.

Mr. Crawford: The only satisfactory way I have found was to take the plants when they first come from the nursery and set them out about four or five inches apart, leave them there until they have grown about six inches high; then you can put the six inch plants by themselves and the three inch plants by themselves, and have them all uniform.

Mr. Aultfather: There is one thing in black raspberry plants that I want to speak of, and that is what the purchaser should do. We generally use a great many plants, raspberry, strawberry and blackberry, and if you insist upon it they will have the strawberry sent by express, but the raspberry and blackberry plants must be sent by freight in order to save expense. If I was ordering strawberry plants and raspberry plants, invariably, for my own planting, I would have them sent long distances by express. I would want them early in the spring before the growth has started, and get them as quickly as I can and plant them, not planting them too deep; and then in a few days have the earth loosened up so as to hold the moisture and not let it bake; otherwise I would just as leave plant in the fall. These people who have careless hands in planting and handling should, I think, buy the transplanted plants and use them.

President Miller: Mr. Scarff will now tell us about the blackberries.

The Blackberry.

BY W. N. SCARFF.

Perhaps the blackberry is given less attention and considered of less importance than any of the bush fruits. We are at a loss to know why this should be, for in reality it is *one* of the most profitable if not the *most profitable* of any of the cultivated fruits. There are two main causes perhaps for its not being more popular; one being the spines upon the canes which cause considerable trouble and annoyance in the gathering of the fruit. Another is its habit of suckering promiscuously over the ground, making it difficult to control and keep in the rows. We must admit these are objections, but they can be so managed as to be overcome in a large degree, which matter we will treat of later.

In choosing a site for a blackberry plantation we would select an elevation higher than the surrounding grounds, as the bloom of the blackberry is easily killed by late frosts. If a plantation could be chosen so as to have timber on the south and east sides, so much the better, as they are in this way protected from the direct rays of the sun and hot, dry winds, as such a protection will be found very beneficial in bringing a crop to full maturity, as the blackberry loves a cool, moist soil where the roots can feed freely, gathering moisture to bring the ripening berry to its full size and to impart therein its natural delicate flavor.

The soil need be only moderately rich, yet should contain a considerable amount of vegetable matter that it may easily be kept friable, giving the plants an opportunity to get thoroughly established and make a strong and perfect root system. The preparation of the soil should be thorough as a matter of course, the same preparation that one should consider necessary for a crop of corn or potatoes, and about the same condition of soil as regards fertility for these crops. The planting may either be done in the spring or fall as best suits the planter; if in the fall each hill should be covered with a good big fork full of common litter to keep the plants protected from the action of the frost of winter and early spring. The furrows for planting should be drawn six feet apart with a single shovel plow, and the plow run several times in the same furrow to get the soil well dug up and loosened, so that the roots may quickly gain a strong foothold and become well established at considerable depth in the ground. If the plantation is to be a large one, say two to five acres, we would advise by all means that the ground be checkered by running cross furrows three feet apart so the plants may be cultivated both ways the first year and several times the second season, thus saving a vast amount of hard work which otherwise would have to be done; as the blackberry should be kept clean until it gains full possession of the ground at least. If there is one thing more important than all others in growing blackberries for profit, it is the selection of proper varieties, although the list of varieties of the blackberry is not so long as most other fruits, yet the proportion of good ones is about the same; many kinds being not profitable and are bound to bring only failure to those who plant them. For Ohio we would select the following kinds ripening as in order named: Early Harvest, Early King, Snyder, Mersereau, Eldorado, Ancient Britton, Taylor and a few Iceberg as a novelty only, and a few Rathburn in order to have the largest blackberry grown; however, this latter kind does not seem to be profitable enough for commercial use. There are some other good kinds, of course, but we believe the list named is the very best one that could be selected for planting in our state. Get good plants from a young plantation; they may be either root-cuttings or suckers, as a good sucker plant with good cross roots, if well planted, will give just as good results as a root-cutting plant. If planting is deferred until spring we would advise preparing the ground as early in season as possible; but if from some cause it is not convenient to plant early, then endeavor to secure plants that have been dug in the fall or very early spring and kept in storage or well heeled in the ground, as such plants are far more liable to grow than plants that are dug after the sap begins to flow in the spring. By this means planting may be deferred even as late as June and then obtain fair results, if planted carefully at a time when there is considerable moisture in the ground. There is no secret about it. Plant whenever convenient, but use good common sense about handling your plants, as the blackberry is very easily killed by exposure to hot sun or dry winds, likewise by exposure to freezing winds when the roots are not protected. In planting endeavor to get the roots down deep in the bottom of the furrow, which should be drawn only as fast as needed; cover the roots of the plants three to four inches only with good loose soil and firm the ground well before leaving the plants, as the young growth starts the soil may be drawn in gradually until the furrow is closed, then ever after give level cultivation only; keep the soil well worked and all weeds down in the space between each hill, and the middle between

President Miller: I will appoint on that committee Professor Lazenby, Mr. Farnsworth, Professor Green, Mr. Dayton, and Mr. Renshaw.

Professor Lazenby has a paper on "The Amount of Waste in Different Varieties of Fruit."

(Paper not available for publication.)

President Miller: We have a habit of putting our new members to work as soon as possible. We have one of them with us today, and while I do not know whether Doctor Bashford, as an agriculturist, can make two blades of grass grow where one grew before, yet we do know when it comes to a church dedication he can find money where there is none supposed to be in existence. Dr. Bashford. (Applause.)

Reverend J. W. Bashford: Mr. President and Gentlemen: I had the advantage of being born on a farm, and I was brought up on a farm until I was twenty years old. I have gone to work on a farm in the morning when I could see the stars, and I have been in the field at night when I could see the stars, so that I got a fairly good training in farm life. But I am not going to tell you men something about horticulture, because I don't know much about it, and you men know more in a minute than I would know in a week on that subject.

I will say this, however: That we have up in our yard a willow tree —which has not anything to do with bearing apples or pears, or anything of that sort—which has an interesting history; inasmuch as it was brought from Napoleon's grave at Saint Helena and planted on Washington's tomb at Mount Vernon. President Hayes brought it from Mount Vernon and planted part of it in his yard and brought part of it down and planted it in our yard, so it is the Napoleon-Washington-Hayes Willow.

Very fortunately it is a very rapid grower, and if any of you should drop me a line next spring asking me to send you some sprouts of that willow I can very readily do that, and you can have a Washington-Napoleon-Hayes Willow in your yard just as well as we in our yard, for I think there will be enough to supply you if you send your demands. I should be very glad to do that next spring without any cost, if you will simply send me your name and the request.

I think the beauty and historical associations have something to do with the home life, and if I can help you I shall be very glad to do so. I have transplanted a couple of oaks and made them live, and I believe you can do that in your yards if you want to put them there.

(Dr. Bashford continued to address the Society along educational lines.—*Secretary.*)

President Miller: We have yet one paper which was omitted from the morning session, Professor Green's Fruit Notes for the year.

Professor W. J. Green: I asked Professor Waid to take and read my Fruit Notes.

(Applause.)

President Miller: The next will be Mr. Montgomery's paper upon "Currants and Gooseberries."

Currants and Gooseberries.

BY C. W. MONTGOMERY.

I presume that at a meeting of this kind the discussion of this topic should be directed along commercial lines. For success then we must consider the markets and cost of production. As to markets, the currant and gooseberry are fruits that will stand shipment; will "stand up" several days after being harvested, so that a nearby market or refrigeration is not absolutely necessary.

In order to make the cost of production as low as possible, the soil best adapted to the fruit should be selected.

My personal experience has been mostly with a yellow clay soil, and from some study of the subject I think the clay soils probably best adapted to the currant and gooseberry.

Both these plants bloom very early in the spring, and low lands subject to frost or south slopes that bring out the bloom early are to be avoided. North slopes are to be preferred. Both seem to enjoy a cool soil and if the north slope cannot be selected mulching should be resorted to, coal ashes being very good for this purpose. They seem to thrive well in partial shade and may be successfully grown in young orchards. We, however, leave every other row vacant, so as to drive through with the spray cart, and where planted in the tree row they are mulched with cinders.

The first pest to bother is the worm. They begin in the middle of the bush, and if they are found before the berries are half grown, Paris Green or Disparene may be used. Later, hellebore, first dissolved in hot water.

Currants and gooseberries are very liable to lose their foliage during the month of August, and if they do it will lessen the crop for the next year, for the fruit buds are formed the year previous to fruiting. To keep this foliage healthy we spray once or twice with Bordeaux after gathering the fruit.

As to varieties we rather prefer the Wilder and Victoria. The Wilder is a very good growing bush, productive, fair sized berry, red, and about as early as any.

Victoria, good growing bush, good color, productive, berry not so large as some, but is quite late and will hang on the bush quite a while when ripe without deteriorating. My selection of these two varieties is based on a study and comparison on my own grounds of the following varieties: North Star, Cherry, Versailles, Fay, Prince Albert and Red Cross.

As to varieties of gooseberries on our own grounds as money makers the Downing stands at the head of the list. We have not been what we would call successful with any of the large English varieties, though we confess that never in any year have we followed the Doctor's directions implicitly, but we cannot be bothered with a variety that will not allow a hair's breadth variation from the prescription. Of the large varieties the Columbus does the best.

The currant and gooseberry leaf out very early in the spring, and on this account we like fall planting, mounding up with earth or mulching to prevent heaving out.

We cultivate thoroughly up till the middle of August, when we sow oats and Canada peas. These make an elegant cover crop and keep up the vegetable matter in the soil. Another year we expect to sow rape and crimson clover, as we believe in rotating cover crops so as to bring in plants with different root systems and that feed differently in the soil.

Where we plant in blocks we plant in rows six feet apart and four feet in the row. Plant four rows and then leave one blank. This leaves a place to drive through with spray cart, and can be planted with potatoes or some low growing crop.

MARKETING.

The ordinary berry basket and crate are best for marketing. One beauty of the currant and gooseberry is that you can begin marketing green, giving quite a long season.

PRUNING.

We like the bush rather than the tree form. New canes begin fruiting the second year, are at their best the third year, and then begin to lose in productivenes. Any time after leaves drop in the fall, and before they start in the spring, cut out new canes, leaving three or four of the best and cut out canes four years old and over.

President Miller Any questions or discussion upon the papers?

Mr. Cushman: I would like to ask if any one of our members has tried that wonderful grape currant, the Chautauqua.

Mr. Upham: I am testing it.

President Miller: (We will now hear from Professor Beach on "Principles versus Rules in Orchard Management."

Principles vs. Rules in Orchard Management.

BY PROF. S. A. BEACH.

American orchard interests are yearly increasing in commercial importance· It would be strange indeed if it were not so. Not only is this country growing populous and rich but the facilities for placing American orchard products in excellent condition and at reasonable cost both upon domestic and foreign markets are being remarkably perfected. These products are being consumed both at home and abroad in constantly increasing quantities. The capacity of cold storage houses for fruit has been greatly increased within recent years. Under modern methods injurious insects and plant diseases may be kept under control to a much greater extent than they were a generation ago. These and other considerations which might be named indicate that commercial orcharding in favorable locations has come to be a comparatively safe and permanent business. As such it is attracting brains and capital more than ever before. It is reasonable to expect that this business will continue to develop, keeping pace with the development of the country at large and with the extension of foreign trade. In view of all these things the subject of orchard management appears to be one of great and growing importance.

In the ordinary acceptation of the term orchard management signifies both the art of directing the activities of the trees to fruit production and the business of carrying on orchard operations.

The methods of orchard practice which are found throughout the country differ widely. These differences are due in part to the position which the orchard holds in the farm economy. Some wish the orchard to furnish sheep pasture or hog pasture first and then bear as much fruit as it will under that method of soil management. Others hold to the custom of raising crops of one kind or another, in the orchard so long as the trees do not take away so much moisture and light as to prevent the growing of crops. But more and more the best fruit growers in the good fruit sections of the country are coming to depend chiefly upon the fruit for the income from the orchard and are studying what is best to do to get the fruit.

It is not easy to decide which is more important, the art or growing the fruit or the business of managing the orchard work and of selling the fruit. Certain it is that successful orchard management requires both. In this discussion, however, the business features will not be considered directly. Attention will be called more particularly to means and methods of controlling fruit production and to some of the principles involved therein without dealing directly with those problems which have to do primarily with the shaping of orchard practice to fit particular schemes of farm economy.

If orchard practice could be based entirely upon a knowledge of what the facts really are in all that concerns the orchard and of the exact extent to which each activity of the tree should proceed in order to get the results desired then it would be possible to prescribe a thoroughly rational system of orchard management. Human knowledge has not yet attained to this ideal achievement, but fortunately, in the realms of plant physiology, of plant pathology, of entomology, of soil chemistry, of physiological chemistry of soil, physics and of other departments of science, able scientists are searching for the truths which the fruit grower needs to know in order that orchard practice may rest upon sound foundations. The present world-wide activity in science is redounding to the benefit of the fruit grower. One has but to compare the best present methods with the best methods of the fruit growers fifteen or twenty years ago to discover that permanent progress is being made in various directions. For example, in the methods of managing the soil to conserve soil moisture and in other ways to increase its fertility; in the treatment of injurious insects and plant diseases; in the handling of fruit, and in other ways which might be mentioned the best orchard practice has in recent years come to be based more nearly than before upon a correct knowledge of the fundamental principles involved. The habits and life histories of many of the common injurious insects and parasitic fungi have been carefully worked out, their vulnerable points have been discovered and the means of keeping them under control are well known. Such practices as that of having holes bored in tree trunks and plugged with sulphur and charcoal or some other mysterious mixture at a dollar a plug, for the purpose of dealing terrible destruction to any fungus or insects which may rashly venture to attack either trunk or root, leaf or branch, do not have any considerable following among the leading fruit growers. Such horticultural methods appear to obtain favor nowadays chiefly with some of the clergymen, judges, physicians, merchants and others who are indulging their horticultural tastes, but whose knowledge of how to manage men is better than their understanding of sound horticultural practice. Among progressive fruit growers rules based upon unsound theories are gradually giving way to more rational practice which when guided by a correct appreciation of underlying principles need not be blindly followed but may be intelligently varied to suit existing circumstances. But while this is so their still remain in even the best modern orchard practice many methods for which no foundation has yet been found in principles capable of scientific demonstration. These methods may be governed either by theory or by practical experience or by both, or some of them may be based in part on theory and experience and in part on recognized scientific principles.

hard to determine. One thing we are certain of is that there were several frosts at this time and many blossoms were injured or killed. Professor Green says that he believes that the way the blossoms are usually clustered underneath the foliage when hill cultivation is practiced hinders pollination by preventing the free access of insects and pollen to the flowers. While in the half matted, or matted row, the blossoms are more often forced above or through the foliage and thus more easily reached by insects or pollen.

From the unmulched patch we were able to pick berries on some varieties as much as ten days earlier than on the mulched, and from nearly all at least five days earlier. This suggests the possibility of extending the fruiting season for a few days.

Among the varieties the Sample did not do quite as well as it has done heretofore, but yet it was not far behind the best.

Parsons Beauty outyielded the Sample this year, but the berries are somewhat dull in color and do not make a good appearance in the basket.

Senator Dunlap yielded fairly well, but the berries are inclined to grow rather small toward the close of the season.,

The Clyde has not done well on the Station grounds for several years, and although it did better this year than usual, it was not up to the average.

August Luther yielded very heavy, but berries were too small from first picking.

The Arnot, or Improved Parker Earl, seems to be identical with the Parker Earl.

In the Success we have a berry of some promise. It is of an even and good size throughout the season and of a bright color, prolific, but perhaps a little soft for shipping.

The Marie is another promising variety. It is prolific, of good form and color and shows up well in basket.

The Nettie seems to be a promising late sort. It is of good size, but a little light in color. Stands out prominent at last of season.

The Robbie is another sort that shows up well, especially at very last of season. The berries are a little larger than the Nettie, but it is not quite as prolific.

Among the very early varieties Johnston's Early seems to take the lead as to prolificacy and size. Its season is much longer than most very early sorts.

The most striking variety in the test this year was the Kittie Rice, formerly the Downing's Bride. In this berry we have the combination of prolificacy, beauty, good size, form and firmness. If this berry keeps up the pace set this year it will be one of the berries of the future.

There is not much new to give in reference to blackberries and raspberries. The Early King, Eldorado and Taylor stand at the head as yet. The Mersereau is a fine, large berry, quite hardy and having a long fruiting season. Ripens about with Eldorado, but continues later.

Of the blackcaps, Kansas, Leffel and Calyx did the best this year.

Among the reds and purples the King stood alone. The Cardinal did not fruit and the Haymaker did not show up as well as usual.

The grapes were well loaded this year, but the newer varieties have not borne sufficiently to give a good idea of their value. One point that was demonstrated this year was the fact that very late spraying of grapes may prove valuable. The grapes had been given what was supposed to be the last spraying, but the check row, left without spraying, caused the other portions to become infected, and it was apparent that unless something was done our grape crop would be of little value. Professor Selby thought that we could do no harm, as the crop would be ruined if left alone, and also thought we could do some good. Although the earlier varieties had begun to turn, we decided to go ahead, and consequently two sprayings of ammoniacal copper carbonate were made, with the result that the rot was checked and the crop saved.

Taking the year as a whole, it was not a very good one from an experimental standpoint, but we anticipate a good general fruit crop another year if the weather man does not deal with us too severely.

President Miller: The next will be a paper upon "Strawberries," by Mr. Farnsworth.

Strawberries.

BY W. W. FARNSWORTH.

Mr. W. W. Farnsworth: Mr. President, Ladies and Gentlemen: In justice to those who are to follow me I shall endeavor to make my remarks as brief as possible.

Of course you would not expect me, in speaking upon strawberry culture, to devote much attention, if any, to the amateur side of the problem, and, therefore, I shall confine my remarks entirely to commercial strawberry growing, as in that part of it I feel much more at home.

In order to treat our subject intelligently let us for a moment consider the needs of the strawberry, what it requires for its best development. We realize that the plant whose life is begun, or rather that is planted last spring, must receive during the first season such care and treatment as will enable it to build up this surplus energy, to build up a system that is capable of producing the greatest amount of fruit.

How then shall we secure this condition? We realize that the young plant has only some three or four weeks from the time of blooming until it is called upon to develop and mature a weight of fruit several times as great as the weight of the original plant. Note the difference of the work required of the apple tree and the little strawberry plant. The apple tree has an entire season of perhaps five or six months to produce an amount of fruit not nearly equal to its weight, while the strawberry in some three or four weeks, perhaps, produces several times its weight in fruit.

To meet this great strain and at a period of the year when the temperature is not conducive to the greatest possible growth, we must have our soil in such condition that it shall yield up as rapidly as possible a sufficient supply of plant food and the necessary moisture which Professor Selby this morning showed so clearly is necessary to carry that food into the plant, and turn it from inert matter into the luscious berry.

Let us first, then, consider the soil. I do not intend to say that we want a sand soil or a clay soil. We simply want a soil that is well supcarbon taken from the air, they are built up by the help of sunlight into food which the plant is able to use to sustain its life and support its growth. This is done only in the green granules which give green color to the leaf, to the bark of young shoots and to other green tissues of the plant. Nowhere but in these green granules has been found the ability to transform the crude materials of earth and air into food which is capable of sustaining life. It follows then that the green substance of plants stands between all organic life and starvation. The food which has been built up in the manner just stated is no longer crude food, but may be properly called elaborated food.

The green granules (chlorophyll granules), together with the soft living substance (protoplasm), in which they are imbedded, are inclosed in minute cells which have very thin delicate walls through which the air may pass to the interior of the cell. Next to the upper skin of the leaf these cells are elongated and stand packed closely together with ends towards the surface (palisade cells). But in the under portion of the leaf they are arranged more loosely, forming spongy tissue with many air passages called intercellular spaces. The soft tender tissue of the leaf which has just been described is protected from mechanical injury, from enemies, and from drying winds or other untoward influences by covering called the epidermis or skin. The under skin is perforated with many, many mouths or pores through which the air may pass to and fro between the intercellular spaces in the leaf and the outer air. These mouths may be opened and closed to suit the existing conditions, thus regulating the entrance or the egress of the air. By this arrangement of spongy tissue the area of the cell walls in contact with air is increased many fold over what it would be were only the outer surfaces of the leaf in contact with air. In one case it has been estimated that the area of cell surface in contact with air was ten times greater than the area of the two surfaces of the leaf.

The leaf cells give off to the air in the aggregate great quantities of water in the form of vapor. Botanists call this process transpiration. King (The Soil: 155) cites the experiments of Hellriegel in Prussia in which it was found that barley used 310 pounds of water for each pound of dry matter produced, summer rye 353 pounds, horse beans 282 pounds, peas 273 pounds, red clover 310 pounds, and buckwheat 363 pounds of water for one pound of dry matter. This is at the mean rate of 325 tons of water for each ton of dry matter produced. He then adds, "These large amounts of water used by vegetation in the maintenance of its functions are necessitated partly by the rapid evaporation which results from the extreme exposure of the foliage under conditions best suited to facilitate a rapid loss of water in this way; but evidently also, in no small degree, by the physiological processes of the plant itself, which demand a large movement of water through the growing tissues."

As has already been stated the crude food materials which have been obtained from the soil and from the air are elaborated in the leaf into organic substances which the plant can use to sustain its life and support growth. But fruit growers as a rule do not sufficiently appreciate the importance of keeping the foliage in good working condition. Perhaps one or two illustrations bearing on this point may be profitably presented here.

The first visible product which results from the activities of the green granules in changing crude food substances into elaborated food is starch. This is formed in microscopic granules. As has already been stated it is formed only in sunlight. By extracting the green coloring matter of a leaf with alcohol and staining the leaf with the tincture of iodine the presence of starch may readily be detected because iodine colors the starch blue. If a leaf be thus treated at the close of day it will be found full of starch, but if put through this treatment early in the morning it will be found empty of starch. In the sunlight the starch is made faster than it is removed from the leaf, therefore the leaf becomes filled with starch during the day. During the night the starch is transferred from the leaf to the plant so that by morning the leaf is empty of starch. Is it of no significance to the plant whether or not its foliage is protected from injury and kept vigorous and healthy?

Very practical lessons bearing on this point are found in the repeated demonstrations of the great gain in the yield of potatoes when the foliage is protected from the attacks of insects and fungous diseases as compared with potatoes grown in adjacent unprotected rows. A good example of this kind is seen in the work of Mr. F. C. Stewart at the Experiment Station, Geneva, N. Y., during the past summer. He sprayed a certain number of rows in a potato field five times during the season. Of the adjacent rows an equal number were sprayed three times and an equal number were left unsprayed for comparison. The following table shows the difference in yield per acre under the different treatments:

EXPERIMENT AT GENEVA. 1903.

Rows sprayed 5 times averaged	292 bu. per acre
Rows sprayed 3 times averaged	262 bu. per acre
Rows unsprayed averaged	174 bu. per acre
Gain for 5 sprayings	118 bu. per acre
Gain for 3 sprayings	88 bu. per acre

Increase in yield due almost entirely to protection of foliage against Phytophthora. Only a little rot.

Should the fruit grower study the root he would find that the soil water is absorbed by the newer parts of the growing root fibres. These often increase their absorptive area by sending out near the growing tip extensions of the skin which are called root hairs. The region where absorption takes place is confined to those portions of the rootlets which are so young that the skin is tender. As they grow older the outside tissue gets too thick and firm to absorb water from the soil and like all the rest of the plant they become dependent on the younger rootlets for the supply of water which exists in the sap. The main root and its branches show in section live bark, the cambium, the live sap wood and in old parts the dead heart wood. Along the surface are found spongy or corky spots, known as lenticels. These are especially significant to the orchardist. It is through these pores that the air has access to the soft inner bark. They may properly be called breathing pores. They are reminders of the well-known fact that the roots must have air as well as water. Soil moisture is not sufficient for the healthy growth of the tree but soil air is also required. If the top of the tree is to make a vigorous growth there must be a corresponding activity in the root. Growing, tender rootlets must be pushed into fresh portions of earth seeking plant food. These activities of the root can not be sustained unless the air permeates the soil so that the respiration of the roots may not be hindered. These observations indicate that the texture of the orchard soil should receive careful attention in order to secure a daily and more than that an hourly supply of raw materials for the food factory above ground where the leaves are at work. It is not sufficient for the top to make starch and send it back to the roots, but, as already said, there must be a supply of air to the roots through the soil. If the air is excluded from the soil by an excess of water whereby all of the space between the particles of soil is filled with water instead of air, then root growth is checked and eventually disease sets in. I have some photographs here to illustrate this point. These trees shown in the photo-take the ordinary hoe and cut off both sides, leaving it about four inches wide, just strike the hoe crosswise of the rows in October.

We have to do the best we can, and the best cultivation people will do under field conditions is to thin out with this hoe. It is a sort of rough and ready method, and it is away ahead of allowing all the runners to grow. You can grow berries and you can grow lots of them and let the runners grow at will, but you cannot grow the best berries any more than you can grow premium corn with ten stalks in a hill. You must restrict them and the cultivation should be kept up until late in the fall. Of course, along in November the evaporation is not so great and the plants become established with the fall rains and cooler weather, so that they will not suffer so much from lack of moisture, but still it is well to retain that moisture for a time of need.

As to mulching, Professor Waid brought out very clearly a number of reasons for a mulch.

We were once supplying a market that paid a great deal of attention to an early fruit, and we know that three or four days' difference of ripening—and sometimes we had more than that much difference in our favor—meant a great difference in the price of the product. And, therefore, we did not mulch. Once in a while we would lose a few berries by their being sandy, but not very many, and at that time that system paid us the best. Our markets ceased to discriminate and we now mulch. Briefly stated the objections to mulching are simply these, as Professor Waid has said: There is a little more danger of a frost, and I think, too, that the mulched patch does not store up the heat in the soil. In other words, the straw radiates the heat, so that there is not so much warmth stored in the soil to radiate out at night, it is a sort of a balance wheel; while the unmulched absorbs the heat during the day and is in a condition to radiate it at night and raise the temperature. At any rate, we know that the unmulched patch will often escape from frost while that which is mulched suffers severely. But I agree with them the mulching is justified. We find it keeps the berries free from sand. Then, too, the straw which we haul on adds to the humus of the soil and makes the soil a great deal better for the next crop. The ground which we planted last spring being a clover field, in November we took the manure spreader, which held about fifty bushels—the rows were a little over thirty rods long—and went over the entire field, putting on a load to each two rows, and then after we went over it once we went over it again, and we are now putting on this week a thin coating of straw, perhaps two tons or two tons and a half to the acre. In the spring, as soon as the plant begins to be seen, we will go through and spread that between the rows. This is a great aid in retaining the moisture. And then as soon as the plant has the fruit and is gathered, it is plowed under immediately and planted to potatoes, and all this straw and manure goes into the soil to be decomposed to store up humus.

We have a regular rotation. I have three fields devoted to it. As soon as the crop of berries is picked, the field is planted to potatoes, and when they are dug rye is sowed, and next spring clover seed is sowed on there and harrowed in, and by fall the clover has a good growth and is plowed under during the winter as the weather will permit, so that every third year we have it in strawberries. I think all you who have had any strawberries will acknowledge that we can not rotate too closely with our berries, and it is a question with me if I can keep up even this rotation too long with success. I want to make a break occasionally, for I believe new soil will produce a better crop of berries with less care than ground which has grown one or two crops of fruit. I am now preparing new ground which I expect to plant in strawberries next year, and give my three fields a rest of two or three years.

Just a word or two in regard to marketing, and I shall close, but I have said nothing about varieties and I don't know that I shall, any more than to say this: First, decide what you expect to do with the strawberries after you have grown them. In other words, whether you want to supply the home markets or whether you want to ship to distant markets. Then go around amongst the growers and find out what is doing the best with them, and then experiment in your own way, carefully. Don't go into any one variety largely. As illustrating this, take the Clyde berry, which came out a few years ago. It has been a great disappointment in perhaps three-fourths of the cases. In my case it has surpassed everything else in my method of culture, but it would be very unwise for anyone else to plant the Clyde, because the chances are it would be a disappointment.

Warfield and Senator Dunlap are fine.

Do not *go* into strawberry culture; *grow* into it. Begin in a small way. You will find a good many unexpected problems come up, and if you go into it largely at first you will find a great deal of disappointment and trouble and loss. There is a great deal that has to be learned by long and careful experience.

Above all, deal fairly with your customers, whether retail or wholesale. Don't consider that after you have sold the quart or bushel and got your money the transaction is ended. Strive to make each transaction please and profit the purchaser and pave the way for another and larger and more pleasant transaction. Try to build up trade by this means.

I might sum up the whole subject of strawberry culture in just about two sentences. We want to manage the strawberry plant very much as we would a horse. Feed it; and then put a bit in its mouth and govern it and control it to do our will. In other words, fertilization and restriction. When I was new in the business an old friend of mine used to say, "You don't want rich ground for your strawberries, for if you have they will all run to vine." I want to plan so

They recognize the value of grass as a mulch. With them the grass is the main thing, particularly in the earlier years of the orchard, and the material which is brought in is merely supplementary.

Thus it will be seen that the grass mulch method differs materially from the usual method, and the difference is even greater than at first appears; in fact, Mr. Vergon and Mr. Hitchings really ought to be credited with having made a discovery. Their method is surely deserving of a distinctive name and the grass mulch method is the term which has been adopted because it is descriptive. The fundamental principle of the method is that it makes use of grass as a mulch, and, if the right course is followed, the grass growing in the orchard is turned to account in such a manner as to be be of lasting benefit to the trees. Grass has been supposed to be harmful to fruit trees, and as orchards are ordinarily managed, it is, but these gentlemen have shown how it may be utilized. Some who are recognized as teachers and leaders in horticulture have thoughtlessly asserted that the orchards where this method has been followed are so favored by nature in soil and location that the trees grow in spite of the grass. It is evident to those who have given the matter careful attention that the grass is beneficial and that the trees thrive because of it. If a man's success must be discounted because he has sagacity enough to select a good site for an orchard, then perhaps we have been giving altogether too much credit to many successful orchardists. There are many good orchard sites in all parts of the country, and when we see a good orchard on one of these sites we are usually inclined to give the man back of the orchard the credit for all that is done, from the selection of said site to the choosing of methods and the carrying out of the same.

This is as it should be, and if one deserves more credit than another it is the one who gets out of the ruts first, and if he is magnanimous enough to help to pull others out then he ought to be called a benefactor.

It is not improper, however, to ask if the grass mulch method is applicable upon any except soils particularly adapted to grass. The full answer to this cannot be given now, but it may be said that the success of the method depends largely upon the growth of grass, although not wholly, and modifications may need to be made to suit conditions. A castiron rule cannot be laid down for this method any more than for any other method.

The quantity of mulching material which needs to be used to supplement the grass mulch must vary with the soil. In general, the conditions which favor the growth of grass are good for the trees, but it must be remembered that grass will endure more water than trees; also that there is such a thing as forcing fruit trees in too vigorous a growth, but not grass. There is a medium condition under which both trees and grass will thrive and it takes about as much skill on the part of the orchardist to maintain this condition as it does to maintain a serviceable dust mulch by cultivation.

We have been taught that it is the part of wisdom, sooner or later, to give up the entire area of the orchard to the trees. Many believe in and practice cropping between the trees for a number of years. Experience has shown that under this treatment the trees made a good gowth. It does not look like robbery to utilize the space between the trees for annual crops when the trees are doing as well as can be desired.

There is, of course, a loss in fertility in this course, but the water holding capacity of the soil is also lessened because of the destruction of vegetable fibre. This is sought to be corrected by the growing of cover crops. Mr. Vergon's remark that he "takes nothing from his orchard but apples," discloses his idea, but it is probable that he is not, even yet, fully understood. Some think that he takes nothing from his bearing orchard but apples, but he means that during the entire life of the orchard no crop is to be taken away except that which comes from the trees. It is true that he did take a few crops of hay from his orchard, but he has repented of that mistake, if it was a mistake, and is doing works meet for repentance. The grass mulch method contemplates not destruction and then restoration or restitution, but rather the production and conservation of vegetable fibre, or humus. The fundamental idea is to fill the soil full of vegetable fibre at the outset and to never let the supply diminish more than need be. In the early years of the orchard the trees can be kept growing by a mulch of some kind, extending out a little farther than the branches. The grass between the trees does not hinder their growth. They thrive quite as well as under cultivation. The space not needed by the trees is given up to grass. It may be clipped, but not pastured. Some of it may be used to mulch about the trees, or it may be allowed to lie where it fell. Soon it becomes a mass of humus which holds water like a sponge. It comes the nearest to being like nature's covering of the soil in the primeval forest of anything that can be thought of. The clipped grass makes a new covering each season and when the second growth comes up through the mulch and forms a dense green coat to ward off the sun's rays from the surface of the soil and to shield it from the drying effects of the wind the conditions are almost perfect.

It may be thought that the drying effect of the growing grass is greater than its moisture holding power. Data regarding this matter are wanting, but in attempting to balance accounts for and against the grass we must not forget that store of humus and the part which it plays in holding water. Cover crops of all kinds take water, and grass is a cover crop. There is plenty of evidence that it gives to the trees more than it takes of both food and water, provided, of course, that the supplementary mulch about the trees is kept up.

There is no taking for granted in the grass mulch method, that after the trees come into bearing something can and will be done to provide food and water. A reserve fund is created in the beginning that is sufficient for all this.

The soil in the young orchard does not lie idle, nor does it produce a crop to be turned into cash to be put into the bank or to buy fertilizers. The soil is constantly cropped, but the product is stored on the spot for the use of the trees as soon as they are in need. The trees in a grass mulched orchard never hang out the signal of distress because of a need of food or water. The reserve fund may be drawn upon at any time. If it makes a man feel comfortable to carry life insurance in a company which he hopes will weather financial storms, how ought he to feel with such a reserve fund as that spoken of in his orchard? Granted that it costs something to give up the entire space of the orchard to the trees and grass, but what an investment! An insurance company or bank which could guarantee its equal in safety and profit, has never been heard of. As the orchard grows older and the branches extend farther and farther the capacity of the soil for the production of humus forming material is lessened. It may take a long time to use up the accumulation, but the supplementary mulch will need to be increased.

It has not been my intention in the treatment of this subject to make disparaging comparisons with other methods, but in order to bring some points out more clearly a few comparisons must be made. It is not my intention, however, to advocate any method to the exclusion of others, for my observations have enabled me to see that it is not the method which makes the man, but it is the man who brings about desired results with a good method as an instrument. A good method is of no value to one who does not understand and apply underlying principles.

It must be self-evident that a good and satisfactory method in the hands of one person may be a veritable misfit in the hands of another, because of unlike conditions, but there need be no misfits if one knows why he does thus and so. Various methods have been proposed and adopted in growing orchards, but it is not necessary to consider all nor any great number. The one which has the most adherents is the clean culture and cover crop method. Another plan which is quite popular is that of pasturing the orchard with swine or sheep. Let us compare these with the grass mulch system, starting with a theoretical orchard, one-third of which is to be managed after each of these several plans. We can most conveniently illustrate by taking ten-year periods. The trees which are to be cultivated are planted in soil which has been put in good condition to receive trees. Some cultivated crop is planted between the tree rows, and an effort is made to not only keep the weeds from growing, but to stir the soil often enough so that the moisture will be retained by an earth mulch. The crop must be out of the way in time to sow rye, oats, vetch, crimson clover or some other cover crop, which is to be allowed to stand all winter to prevent washing and leaching of the soil; to gather up and save the vagrant nitrogen; to decay and thus add humus. This process, with such modifications as may be thought necessary, is to be repeated each season. With some kinds of fruit trees crops may be grown only two or three years, but in an apple orchard five years is about the limit. We cannot count upon five full crops of corn or potatoes, possibly not more than three. At the end of the first ten year period we may have to the credit of our cultivated orchard sufficient cash from the sales of corn and potatoes to pay for all the cost of cultivation, and perhaps, also, to pay for the seed of the cover crops. On thin soil this cannot be done, but it is not too much to expect if a yield of corn of fifty bushels and of potatoes one hundred and fifty per acre can be obtained. On hillsides where the soil is thin and washing is apt to occur the orchardist must manage with skill to keep the soil in place and to secure growth enough of a cover crop to keep even with the loss of vegetable fibre. He may find at the end of ten years that the soil is poorer than at the start; that no crop will grow and that the hillside is full of gullies. The trees may appear to be in good condition and may have made a good growth and have borne some fruit. On good land, or gently sloping fields the trees will most certainly be in a thrifty, growing condition; the pride of their owner and the admiration of all. The cover crops have fulfilled their mission except when the latter part of the season has been so dry that the seed failed to germinate. This may have happened two or three seasons out of the ten.

The trees in the grass mulch orchard have done well also. Some dry seasons they may have gone a little ahead of the others and at other times the cultivated trees have rather taken the lead. The grass mulch trees have probably shown more precocity in fruiting, but they would need to have borne considerably more fruit than the others if the accounts of the two plots are to balance. It will be just the same if we do not count the value of the fruit and interest on the investment in either case. The extra cost, then, of the grass mulch orchard is found in the items of the material which has been used around the trees and the time consumed in mowing. The amount of mulching material required on thin soils may be considerable. Possibly these items may foot up to an average of five dollars per acre each year. This may be too moderate an estimate for thin, hilly land. What have we in a grass mulch orchard at the end of ten years to show for fifty dollars per acre more than would be required in the culture and cover crop system? We have a condition approaching that of the virgin soil of the forest. With but very little labor and not a large quantity of material, for the young trees do not need much mulch about them, we have improved the soil to a wonderful degree. The decayed grass and added material have filled the soil with fertility, and its water holding capacity has been greatly increased. The value of this improvement is hard to estimate, but it exceeds the cost. One who appreciates its value would not part with it for many times its cost.

The plot which is to be pastured we will suppose to have been treated the same as the cultivated portion, but it is now ready to be seeded to grass. We may suppose that the trees are fully as good as those of either of the other plots. During the second ten-year period the cultivated plot is to be treated as before, and even more pains taken to grow cover crops, since the need of humus is becoming urgent. Crops do not grow thrifty in a ten-year old orchard and the ground under the trees is most likely bare and hard, for it cannot be thoroughly tilled and nothing will grow in the shade. We must give careful attention to the cover crops which are grown, for the trees are likely to need nitrogen and much of this will possibly be lost if care is not taken to follow the best methods of tillage and to choose the right crops.

To prevent the soil washing from the hillsides will become a problem very hard to solve. The trees will probably make a good growth during the entire period and will give good crops, but some unsatisfactory conditions will manifest themselves. Some season when the trees are laden with fruit a drought will occur; in fact, such a condition is about sure to happen every year, but if it comes in August or September the crop will be seriously injured. There is no help for it because the effect of early spring cultivation cannot last all summer, and then, the cover crop, if it does not fail outright, will only make matters worse for the trees. The fruit will ripen prematurely, drop early and keep poorly. The trees will suffer more than is apparent at the time. On account of scarcity of water they cannot give a crop of fruit and form fruit buds for the next year. This means alternate crops. Often on dry hillsides where the snow does not lie the ground freezes so deep that trees perish or are so nearly killed as to prove easy victims to other external agencies. There can be no crops grown between the trees for profit during this period, hence the entire cost of cultivation and of seed must be charged against the fruit. This cost is hard to estimate, but it is not likely to fall below five dollars per acre each season, and will probably go above ten. The grass mulch portion is to be treated as before, but the call for mulching material will increase, because the grass is making a less vigorous growth than at first. Possibly we may need to increase the estimates by one-half. The cost of mulching may still exceed that of cultivation, but it is useless to try to give exact figures, for the conditions are so variable on different soils. We may look for some notable differences between this and the other plots during this period. There may not be such "bumper" crops on the grass mulch trees as on the others, but there are quite sure to be more crops and more uniform ones. This is because the trees will not suffer for water. They can carry a crop to perfection and at the same time form fruit buds. A crop every year may be expected except on a few varieties. Premature ripening and early dropping will not cause much loss, and as for trees suffering in the winter, because the soil freezes below the roots, cutting off the supply of moisture, such a thing is hardly possible. Often it will be found that when the ground is frozen a foot or more in depth where the ground is bare, there will be almost no frost under the mulch. The soil will not wash in the grass mulch orchard. How about the pastured orchard? We will suppose that it has been well seeded and that hogs and sheep have been kept in it. If the trees have been trimmed high enough to keep the stock from eating the fruit very likely the bodies of many of them are sun scalded and ruined. If the trees are trimmed low the stock will get a large share of the fruit, but we must overlook that for the good they do in destroying worms; the same as with the birds in our cherry orchards and raspberries. If there are any worms in the cherries the birds surely get them, for they take the whole crop. There is one comfort in having stock in an orchard, and that is that we never know just what our loss from fallen fruit has been, and we are not annoyed at picking time with uncolored fruit on the lower branches. A few old sows will take care of the fruit on the lower branches of a good many trees, and a flock of sheep will take all the leaves four or five feet up so as to let the sunshine in. If you do not want to be bothered with the picking of any fruit at all just let the horses and cattle in. But seriously, what harm can sheep and hogs do in an orchard, provided the trees are trimmed up to a reasonable height? The most serious harm is that of cropping the grass so that the trees suffer from dry weather in August and September. The fruit drops too early and the animals get much of it that might just as well be saved. Of course they may just as well have the wormy fruit, and better, but the good which is done in this way has been overestimated. If every wormy apple dropped before the worm came out it would do much good to have them eaten at once, but many of the worms leave the apples before they drop. The inability of the pastured orchard to resist dry weather conditions is really the thing most to be feared, and this is the cause of the greatest loss. The pasture in the orchard may be worth three dollars an acre each year, and there is no cost of maintenance as with the mulched and cultivated portions, hence the pastured orchard is ahead for the second period, in this respect. The actual quantity of fruit gathered from it, however, is likely to be much less than from the other orchards, but as the fruit which is eaten by the stock is not wholly lost, and as the droppings, particularly of the sheep, enrich the soil, there is a gain in fertility.

After an orchard has been cultivated twenty years or more it becomes a difficult problem as to what to do with it, and the difficulty increases with advancing age. It is too late then to change to another plan successfully, and if no change is made a crisis in the life of the orchard must come before long. The crisis comes when cover crops fail to grow satisfactorily. The time when this happens must depend upon the fertility of the soil and the distance between the trees. In many orchards it might happen at twenty-five or thirty years of age, but in others it might be delayed much longer.

Of course I am supposing an extreme case when the orchard is cultivated every year. In practice this is not usual; there being often a period of several years during which the orchard is in grass. This practice delays the crisis, but reseeding becomes more and more difficult as the years go on. Each time when the sod is broken up the trees seem to be invigorated, because cultivation makes the plant food available, and, as a matter of course, the supply is rapidly exhausted and there is no way to restore it by growing a crop in the shade. Thus the good effect of cultivation is deceiving, as it brings about a condition which seems to be desirable but is not so, for it cannot last. The longer an orchard is cultivated and the greater the depletion of humus, the more noticeable becomes the premature ripening and early dropping. Cultivation, where a goodly supply of humus is present, does not have this effect but rather the reverse. Cultivation conserves the moisture, and with the aid of humus there may, in the earlier years of the orchard, or later, when a sod or a heavy cover crop is turned under, be sufficient moisture retained to carry a crop through to perfection. But I am speaking of the inevitable period when the vegetable fibre is depleted to such an extent that cultivation is of little avail. This is not a fancy sketch, for it is an observed fact that pastured and cultivated orchards do suffer seriously from dry weather. We know hardly enough concerning grass mulch orchards to say just how they do behave when they have passed the quarter century mark. My own experience and observations lead me to think that a properly managed grass mulch orchard, even when thirty or forty years old, is practically immune against dry weather. The apples ripen slowly, hang on with a remarkable tenacity and keep as apples used to keep when the land was new.

I willingly admit that regarding the behavior of old orchards under this system, I stand upon theoretical grounds, but my faith in the soundness of the theory is so strong that I am not afraid to take the risk of advocating the grass mulch method for apple, pear, plum, peach, cherry and quince orchards. I know of the method having been applied in the case of all these fruits and it has not failed in any case. It may fail in some localities, especially where grass does not flourish. It may be difficult of application on poor, hilly land and where mulching material is not to be found. On very heavy and naturally wet land it may be that the fruit will not color well on the trees so treated. Finally, there can be no doubt but in the hands of some men it will become a farce, a mere make believe at orcharding. The orchards of such men will degenerate into blackberry patches and thickets, and in the struggle for existence the trees will get worsted every time.

At this point Professor Beach exhibited some cross-sections of wood and explaining certain experiments he had made.

Mr. Harris: I have had some argument with different persons on a certain point, and I would like to ask you (referring to Professor Beach) whether I am right or wrong. I contend that animals live without the use of lungs, but that nothing lives without some form of a stomach, movable or immovable. I contend that the foliage of the tree is a stomach.

Professor Beach: Professor Selby, will you help me out?

Professor Selby: I was talking to a friend of mine in New York, who said he was going down to Saint Louis, and I said, "Have you ever been there?" He said, "No." I said, "You don't know the color of the water down there, do you?" He said, "No." "Well," I said, "you will have to be very careful down there or you won't know the color of the water from the color of the beer." He said, "Why I will know the difference in the taste." I agree with him he could tell the difference in the taste of river water, but when it comes to an analogy of this kind, I certainly would give up the question. I don't consider that there is any—that we can endeavor to make anything like analogies of this kind between the animal and the vegetable world. The animal and the vegetable world are complementary. Animal life upon the earth is impossible without vegetable life upon the earth.

Mr. Harris: That is right.

Professor Selby: When you go back to the beginning, the beginning of life upon the earth must have been in some low form that was able under the influence of sunlight acting on chlorophyll to carry on these organic building up processes from inorganic material, and when you get back to the fundamentals of plant growth, why, that is as far as you could get; and I don't care as far as I am concerned whether a cow has a stomach or not; the plants can go on growing. Of course, that is with all due respect. That is the attitude we have got to take on a question of this kind. In so far as plants utilizing these materials is concerned, there is no analogy, because plants work on inorganic material and build up organic products. Animals take the organized materials and break them down again. You see you can not have any analogy; the two are entirely opposed processes. The one takes the elements and builds them up into organized products endowed with the protoplasm material through which the energies of that life are exercised and that same protoplasm worked into the plant by the energy of the sunlight through time builds up the energy, the very energy by which I translate what I ate at the hotel into speech. (Laughter and applause).

Mr. Shively: I desire, in behalf of the fruit growers of Ross County, to extend to this Society a cordial invitation to meet with us next winter. We will assure you good entertainment.

And thereupon a recess was taken until 7:00 P. M. of same day.

THURSDAY EVENING SESSION.

December 10, 1903.

THE OHIO STATE HORTICULTURAL SOCIETY convened pursuant to recess and was called to order at 7:10 P. M. by President Miller, who said:

The first on our program will be Professor Selby's paper on "The Season's Outbreak of Diseases."

Report on Plant Diseases for 1903.

BY A. D. SELBY.

The records for the year show a continuance of the struggle to protect cultivated plants from the diseases to which they are subject. Personally and individually I have never been called upon to follow through a season which imposed greater labor than 1903; we have had periods of atmospheric extremes which were trying and somewhat unusual. Closing such a year it is too much to hope that any one can promise or prophesy easier times for the future. The matters of congratulation are that with each year we learn better and better methods of combating and preventing the troubles or maladies of plants.

In these respects the past season bears evidence of strong advance. The gains are in the treatment of leaf curl of the peach, peach scab or black spot of fruit, potato rosette prevention, and the equally needed re-demonstrations of established methods of treatment for grape rot, oat smut, apple scab, onion smut, cherry and plum leaf spots and a number of others.

As to fungicides, formalin is steadily gaining favor for infectious soil troubles, including treatment of the seed tubers of potatoes and the sulfids of lime, soda and potassium belong among efficient spray germicides. I am free to admit, however, that Bordeaux mixture still leads in effectiveness as a fungicide for spray applications and I do not apprehend that its relative rank will soon change; that other effective fungicides, as, for example, sulfid of lime, have a higher value as scale insecticides will readily be granted.

I may add, moreover, that the name "liquid Bordeaux mixture" is not called for here, whatever need may exist in the west in competition with "dust sprays." In general it is wiser to let the newcomer bear the compound or hyphenated title! Just "Bordeaux mixture" is the name!

IMPROVEMENTS IN SPRAY MACHINERY.

The advances of the year in spray outfits are in perfecting processes before known, rather than in brand new ideas. In this class belongs the commercial exploitation of the Loop method of stationary engine and air compressor, with portable spray cart carrying two air tight tanks, one for spray mixture and the other for compressed air.

Doubtless this method has practical triumphs in store for it. The light weight of the cart or wagon necessary to carry these two tanks and contents permits of a wide range of usefulness, while the high pressure employed insures the highest efficiency to be secured by the fineness of the spray applied. Compared with power sprayers upon large tanks, the compressed air outfit has its greatest advantage in the lighter weight and a marked disadvantage in the smaller volume of spray mixture carried at a single load. The lower cost of hand sprayers still leaves them in possession of the field where efficient labor may be obtained at reasonable cost. In spraying potatoes, traction or hand outfits nave a place: too heavy pressure annoys and delays by blowing over the tops. Altogether it would seem wise to expect that no one pattern of spray outfit will soon displace all the others. The compressed air apparatus must be recognided as a distinct advance in spray machinery at the same time that we acknowledge its limitations. Other accessories, such as Mr. Owen's "spar" for many nozzles, will be added as time passes.

Among the diseases to be described in detail those of vegetables will first be noticed:

ASPARAGUS RUST—CABBAGE TROUBLES—FIELD PEAS.

Asparagus rust must be distributed over the whole of Ohio, judging by correspondence and personal observations. With its first appearance the rust promised to destroy the asparagus beds, or at best to cripple them seriously. After a few years this view may be questioned. Dr. Halsted informs me that it seems less violent in New Jersey the later seasons; the same appears to be true in Ohio. While cutting and burning the tops is to be insisted upon to maintain asparagus beds that shall be certainly profitable, there seems to be less to dread in the future from the asparagus rust.

Cabbage diseases multiply, though but two of them are conspicuous. These are the bacterial brown rot of crucifers including cabbage, and the club-root. It is unnecessary to describe these to a cabbage grower or to one who grows the allied plants attacked by the same diseases. Club-root fungus will live for an indefinite time in the soil of this becomes once infected; therefore rotation must be considered in checking it. While the bacterial rot may not survive so long in the soil, successive crops of allied plants show increasing amounts of the disease.

Field peas have attracted attention to the recurrence of serious disease, especially by following with the same crop. This calls for investigation, but has not received it.

CUCUMBER MOSAIC DISEASE—LETTUCE.

The variegated markings of cucumber leaves, constituting what I have described as "a mosaic disease," again reappeared last May. This forcing-house trouble may prove a serious one, as it is of analogous character to peach yellows and the mosaic disease of tobacco. The cause of it seems to lie in mal-nutrition, not in parasitic attacks. Replacing diseased plants upon discovery, by fresh, healthy plants was successful in crop salvage; the replants did not commonly show disease. Some recent investigations of tobacco mosaic disease in Java, made by Hunger, seem to prove that tobacco mosaic disease there is transmitted from diseased to healthy plants by mere touching, first the one, then the other, as in the removal of tobacco worms. The actual conditions of transmission of the cucumber mosaic disease are not known. Those who grow cucumbers indoors should keep a sharp watch for this trouble.

While lettuce plants are not usually attacked by nematodes in our state, plants from Maryland recently received by a lettuce grower at Wooster were badly affected. The enlargements on the roots were very conspicuous as illustrated for other forcing-house plants in Bulletin No. 73. I learn from southern investigators that this trouble is very general there. The malady may become more prevalent. The remedy is to sterilize the soil by steam as described in Bulletin No. 73.

Just a few weeks since, my attention was called to a "rosette" condition of forcing-house lettuse at Wooster. It now appears that this is analogous to the potato rosette disease and possibly caused by the same fungus parasite. The remedy will lie in sterilizing the soil employed in the benches. The symptoms of the trouble are checked growth of the central leaves, together with normal elongation of the lower leaves; the commoner period of occurrence is soon after transplanting. The plants often recover in a manner, though much retarded in growth. I shall not be surprised to learn that this is more or less widely distributed, though possibly at times overlooked.

POTATO ROSETTE AND REMEDIES—POTATO ROT.

The "potato rosette" was last year described as a new potato disease. I do not need to repeat the description, which has been published in Bulletin No. 139, but the rosettes are easy to discover, as are also the growths of the fungus upon the seed tubers or those of the crop. Moistening the tubers with water aids in making the color differences easy to see; note the dense brown circular patches as well as the mesh-like fungus threads on those exhibited.

The rosette has been universally prevalent in Ohio this season, especially so in early varieties. It seems clear from our work at the station that the fungus may also live in the soil where potatoes are grown.

We have conducted extensive experiences at the station, Wooster, to prevent this rosette disease. The results are embodied in a bulletin now being printed. In some cases the yields have been increased more than 100 per cent., in a light crop, by seed treatment; in others the gain is less marked, though in every instance apparent. Where the soil is infected, the treatment is less effective, probably because the fungus is not all destroyed and afterwards attacks the plants. My recommendation is: *Treat all seed potatoes with formalin solution for two hours, as per spray calendar* (1 pound to 30 gallons of water) *before planting.* This treatment is as good as any for scab and best for rosette.

Potato rot or late blight again appeared in late potatoes in the northeast. I am convinced that this mildew, like that of cucumbers, is influenced by the conditions of the season and probably by that of the soil as well. To date, chiefly the colder clay soils seem to have suffered from rot; these have shown mildew and rot during the cold, wet seasons. I was interested to learn at Washington recently that the late blight and rot occurred the present season in Florida; there the season was wet and cold.

TOMATO TROUBLES.

Field and forcing-house tomatoes both suffered from point rot of the green fruit due to insufficient water in the soil. The leaf mold of the tomato was found outdoors as well as under cover the present season, though I believe only where transplanting from diseased houses was practiced. We have also studied a disease of tomatoes which is the analogue of the potato rosette. While we might call it tomato rosette for this reason, "tomato slims" is more characteristic. Both stems and leaves show a drawn look and the latter a curled aspect. This disease may be expected to occur when tomatoes are planted following potatos affected by the rosette. The remedy lies in this avoidance in rotation as well as the avoidance of the disease in the plant bed.

Tobacco diseases are being studied in connection with the Germantown test farm work in tobacco.

ORCHARD FRUITS—APPLE, CHERRY AND PLUM MALADIES.

Apple diseases have occurred—twig-blight disastrously again at the north. It is a long time since I saw so much black rot of the apple, especially upon the fruit on the trees; the leaves also showed it. My assistant, Mr. Lummis, suggests that the twig-blight and black rotof apple should be studied together. Certain it is that twig-blight must be carefully studied again. It has been attributed to the organism of the pear blight. Plum rot prevailed widely at the north; the same applies to the leaf-spot of the plum and cherry, which stripped many trees of their leaves. If we should have a very severe freeze during the present winter I feel assured that many cherry and plum trees will suffer by winter killing, as they did in 1897. No new remedies are needed for these leaf-spots. Bordeaux spraying is effective for both and very beneficial for rot.

In grape rot treatment the same spray treatment presented last year is to be reiterated. The rot is about everywhere in the state.

PEACH LEAF CURL.

The season of 1903 was a famous one for leaf curl of the peach, the loss of crop on susceptible varieties in Ottawa and Erie counties, due to this cause, was very large. It was probably larger than in 1898. In the matter of prevention we have added certain fungicides to the efficient list without discrediting Bordeaux mixture; Bordeaux mixture is an efficient remedy, as demonstrated in 1897 and 1898; I still recommend it as the remedy to use where fungus disease alone, such as rot, scab and leaf curl, are to be controlled. When the scale question enters, the season's work has demonstrated that the lime-sulphur sprays, the soda-lime-sulphur spray or the soda-lime-sulphur-vitriol spray are thoroughly effective for leaf curl of the peach. This was to be anticipated since alkaline sulfids have long been recognized as efficient fungicides. Among these, potassium sulfid remains practically the only efficient remedy for gooseberry mildew. The lime-sulphur-salt wash as employed to check San Jose or other scale insects owes its brick red color to the formation of calcium trisulfid or pentaosulfid; the same applies to sodium sulfids. I need not enter into a discussion of the effectiveness of the wash as an insecticide, though presumably due in part to these same compounds of lime or soda. It is certainly a matter of congratulation that we have here a spray which is both an efficient insecticide and fungicide.

The illustrations show respectively five year old Elberta trees at Danbury orchard of Duroy & Yule, sprayed with lime-sulphur-salt in the work of the Entomologist February-March; also the check group of unsprayed. Upon June

16, 1903, when the photographs were taken, the unsprayed showed no fruit and only end tufts of leaves; the sprayed trees had a fine fruit crop and abundant foliage. The next pictures are those taken June 16, of our President's eleven year old Elberta trees at Gypsum. In thes the unsprayed also cast scant shadows and bore no fruit, while the sprayed have a fine crown of leaves as well as a fine crop of fruit. Here the spray was soda-lime-sulphur and vitriol applied about March; soda-lime-sulphur gave results not distinguishable from those shown in the picture.

For leaf curl alone I am not sure that the evidence in favor of fall spraying is as conclusive as that of spring treatment, the latter any time within a month previous to blooming.

Nothing but neglect will explain leaf curl losses hereafter in Ohio.

PEACH SCAB.

The losses of peaches from scab and rot following the cracking from scab, in the Gypsum district during the fall of 1902 must have reached $50,000, possibly more. This loss was almost entirely of the Salway sort and shows how a wet later-season favors scab development on the Salway peach. Conditions previous to September were similarly favorable to scab in 1903; the later rains were more scattered, and more bright weather prevailed than last year. Despite this slightly more favorable season and the fine weather at picking time, many unsprayed Salway peaches were unmarketable this year by reason of hard, black sides and crack caused by the scab fungus. The Salway peaches kept free from scab by earlier spraying remained entirely free till July 3; when next examined, August 13, there was a serious amount of scab, which continued to increase and to show as separate black spots at gathering.

The amount of crack and rot in these was small compared with the unsprayed. It is held that these trees should have been sprayed for scab again, about the first week in July, to secure satisfactory prevention.

At Danbury, Salway peaches sprayed with half strength Bordeaux (Bordeaux II) May 16th following lime-sulphur-salt spray applied early, had little scab. Those unsprayed after foliage had much more scab and crack, while the parallel rows sprayed with soda-sulphur 1 pound of each, 50 gallons, and with lime-sulphur same strength, a few days later than those receiving Bordeaux, were perceptibly better than the unsprayed, but inferior to those that received Bordeaux II. In any case the foliage injury from the spray was not serious.

Another orchard at Danbury, more or less neglected, was sprayed twice (in foliage only) with Bordeaux II once previous to the middle of June and again about the last week of June or first week of July. In this neglected Salway orchard thus only twice sprayed and once so much later than we have hitherto thought wise, *the crop of fruit was fine and the freest from scab I saw this year.* These two cases yield the same lesson, namely: that to prevent peach scab we must spray at least once, early in foliage or just previous to blooming, and once more about the first week of July or perhaps sooner if small scab spots appear on the fruit. The pictures fail to show the full differences in the fruit.

As to the fungicide to use, *Bordeaux II for foliage applications leads very decidedly.* While lime-sulphur 1 to 2 pounds each to 50 gallons and soda-lime-sulphur merit another season's trial, we must grant them only a tentative place for scab treatment.

THE SHRIVELING OF WHEAT.

There was very general complaint of shriveled wheat and the consequent reduction in yields. That this shrinkage was more widely distributed than usual is claimed with good reason. The areas affected were not simply lower soils—the injury extended over certain highlands as well. In some instances it is clear that the rust is to blame, in others the case against the rust cannot be made clear. Nor is it plain that the difference in injury between early and later fields was as great as is often the case. These points are noted to present the issue properly. What shall be said as to remedy?

To me the problem is likely to prove many sided and to involve other factors than rust. As a suggestion I should like to see liming tested, especially the use of the low magnesian limes in the southwest. At the same time it will probably be advisable to seek early varieties of wheat. Unless the field is misunderstood by the writer, there is here material for a serious and prolonged investigation; one, too, that should be early undertaken.

IMPURITIES IN CLOVER AND ALFALFA SEED.

All fruit growers must also grow grasses and legumes, including the clover plants. Alfalfa has gained a position among our Ohio clover plants and brings in the seed dangers heretofore unrealized. Aside from plantain seeds and ather noxious weed seeds in clover seed, we have also dodder seeds. These dodders are parasitic seed plants which attack the clover plants soon after starting winding about them, drawing nourishment as a parasite and soon working ruin. But as our clover seeds are short lived by nature, we won't always find patches killed by dodders. With alfalfa we discover the actual injury. I have pictures of these seeds here and all are likewise shown in Bulletin No. 142. There are two or perhaps three sorts of dodders where seeds come in the western grown alfalfa seed, all that we can readily obtain, and perhaps the best we can purchase. Of these the seeds of the one or two which are smaller than clover seed, the clover dodders (*Cuscuta Epithymum* and *C. trifolii*) may be separated by recleaning, but many of the seeds of field dodder (*Cuscuta arvensis*) cannot be thus removed as they are about the size of alfalfa seeds. The remedy is fairly easy to apply, as stated in our Bulletin No. 142, which contains the enlarged pictures of all of them and many other weed seeds. The remedy is, *do not sow any alfalfa seed unless it has been recleaned over a sieve of* 20 *meshes to the inch.* That which after cleaning contains the field dodder seeds *should not be sown.* For patches of alfalfa or clover attacked by dodder, hoe up all affected plants by the roots and allow to dry on the spot. Then burn the parts with added fuel to kill the dodder seeds; when a wet August or the following spring comes around reseed the patches. In such cases a new stand is usually not difficult to obtain.

Music by the Smith Sisters' Quartette.

President Miller: Our executive committee desires at this time to make a report, Mr. Cushman.

Mr. Cushman: Mr. Chairman, Ladies and Gentlemen: The report of the executive committee is only as the committee to whom the President's address was referred.

Report of the Executive Committee on President's Address.

1st. That the Department of Nursery and Orchard Inspection deserves the continued support of this Ohio State Horticultural Society. That the Executive Committee is directed to take such action as may be necessary to keep the department in active force.

2d. That we favor the establishing of test stations for varieties of fruits in such localities as seem adapted to fruit growing; that our secretary call the attention of the Board of Control of the station to this action of the Ohio State Horticultural Society.

3d. That the question of a horticultural exhibit at the St. L. P. E. be continued in the hands of the executive committee.

4th. That the question of a permanent secretary and reorganization be made a special subject for discussion at the Friday morning session.

E. H. CUSHMAN.
W. J. GREEN.
F. H. BALLOU.

And thereupon it was moved and seconded that the report of the executive committee be adopted.

Motion unanimously carried.

President Miller: The next exercise will be to turn the meeting over to the care and good judgment of Professor Lazenby.

(The "Symposium" was entertaining and interesting; because of lack of space we can only mention the toasts.—*Secretary.*)

"Horticulture and the State Fair."—F. H. Ballou.
"Horticulture and the Grange."—B. F. Upham.
"Horticulture and the Press."—W. I. Chamberlain.
"Horticulture and the State Board of Agriculture."—Wm. Miller.
"Horticulture and the Local Horticultural Society."—W. J. Green.
"Horticulture and the State Society."—W. W. Farnsworth.
"Horticulture and the Experiment Station."—C. W. Waid.
"Horticulture and the State University."—V. H. Davis.
"Horticulture and the Public Schools."—Homer C. Price.
"Horticulture and Flowers."—E. H. Cushman.
"Horticulture and the Country Roads."—Isaac Freeman.
"Horticulture and Cold Storage."—R. A. Hunt.
"Horticulture and the Large Farm."—T. S. Johnson.
"Horticulture and the Small Farm."—Matthew Crawford.
"Horticulture and the Market Wagon.'—U. T. Cox.
"Horticulture and the City Customer."—C. W. Montgomery.
"Horticulture and Nursery and Orchard Inspection."—F. A. Burgess.
"Horticulture and Insect Enemies."—P. J. Parrott..
"Horticulture and Vegetable Pathology."—A. D. Selby.
"Horticulture and the Amateur."—F. E. Carr.
"Horticulture as a Vocation."—L. B. Pierce.
"Horticulture and the Home."—E. M. Woodard.
"The Possibilities of Horticulture."—S. A. Beach.

FRIDAY MORNING SESSION.

December 11, 1903.

THE OHIO STATE HORTICULTURAL SOCIETY convened pursuant to adjournment and was called to order at 9:10 A. M. by President Miller, who said:

The first on our program this morning will be the report of Nursery and Orchard Inspection, by Professor Burgess.

Pofessor Burgess: Mr. President and Gentlemen: I will say that the report of the Nursery and Orchard Inspector for last year has just been published, and I have copies here for those of the members who desire. A copy will be sent later to each member of the Society. In case you do not receive a copy we will be glad to send you one if you will let us know.

Report of Nursery and Orchard Inspection in Ohio for 1903.

F. A. BURGESS, CHIEF INSPECTOR.

During the past year the number of Assistant Inspectors has been increased so that for the entire period an average force of six men have been employed. The number of nurseries to be inspected has increased considerably since the last report was made, owing to the opportunity offered for free inspection. The orchard work has been carried on along the same lines as in the past, except that some time has been devoted to making general inspections. This work has served to show more definitely than ever before the distribution of the pests specified in the law.

In order to ascertain the effect that a strict nursery inspection law is exerting in preventing the spread of the San Jose scale on nursery stock, a general inspection of the orchards in Columbiana county was made in September, 1903,. This county was selected on account of there being about the average number oforchards of any county in the state and because the only outbreaks of this insect that were known occurred in isolated situations.

The agricultural statistics for Columbiana county submitted by the county auditor to the Secretary of the Ohio Department of Agriculture for publication, places the acreage of orchards for the year as follows:

Apple	5,782
Peach	208
Pear	15
Cherry	4
Plum	23
Other small fruits	162
Total acreage	6,194

All of these orchards were inspected and in spite of the fact that many new ones are being planted, only one additional outbreak of the scale was found. This argues well for the efficiency of the nursery inspection work. Peach yellows was found in every township in the county and black knot is generally distributed.

NURSERY INSPECTION.

During the period from January 1 to June 1, 1903, twenty-seven applications for nursery inspection were received and thirty certificates were issued, thus making the total number received from June 1, 1902, to June 1, 1903, two hundred and sixty-eight, and the number of certificates granted during this time was two hundred and sixty-one. Seven certificates were withheld for various reasons.

The number of applications for nursery inspection for the season of 1903-1904, that were received and placed on file on or before July 1, 1903, was three hundred. Thirty-five applications have been received since that date, making a total of three hundred and thirty-five. The number of certificates of inspection issued to January 1, 1904, was three hundred and eighteen. During the year 1903 three hundred and fifty-eight nurseries were inspected.

The following numbers of orchard trees and shrubs on nursery premises have been destroyed by the owners during the year:

Trees destroyed for San Jose scale	2,376
Shrubs destroyed for San Jose scale	49
Currants destroyed for San Jose scale	506
Trees destroyed for peach yellows	1,849
Trees destroyed for black knot	82
Sprouts destroyed for black knot	284
Total destroyed	5,146

Three thousand eight hundred and eighty feet of osage orange hedge infested with San Jose scale has also been destroyed.

Nursery stock has been found infested or infected and has been destroyed as follows:

Trees infested with San Jose scale	9,315
Trees infested with Putnam scale	4
Trees infested with scurfy scale	58
Trees infested with oyster-shell scale	26
Shrubs infested with oyster-shell scale	14
Trees infected by crown gall	852
Total destroyed	10,269

The reports received show that over one million three hundred and ninety thousand trees, shrubs, plants and vines have been fumigated during the year in accordance with the directions of this Division.

This method of treating nursery stock is becoming more general and most of the larger nurserymen are now equipped so as to supply fumigated stock to the trade.

ORCHARD INSPECTION.

One hundred and twenty-six petitions for orchard inspection have been received during the year from the following counties: Ashtabula, Belmont, Clermont, Columbiana, Cuyahoga, Delaware, Erie, Fairfield, Fayette, Franklin, Fulton, Gallia, Hamilton, Lake, Lucas, Montgomery, Morgan, Ottawa, Richland, Ross, Seneca, Stark, Summit, Union and Wayne.

One hundred and twenty-three request an inspection for the San Jose scale and one each of those remaining were for the canker worm, peach yellows and black knot. The premises covered by eighty-eight of these petitions have already been inspected, also a considerable area surrounding the nurseries but more work of this character remains to be done this winter. Four hundred and sixty-four orchards and premises have been inspected. This has required a tree-by-tree examination of over two hundred and fifty-seven thousand trees, shrubs, plants and vines.

During the year 1903, trees and shrubs have been destroyed or treated in accordance with the directions of this division as follows:

	Destroyed.	Treated.
Trees infested with San Jose scale	1,148	190,289
Sprouts infested with San Jose scale	125	
Shrubs infested with San Jose scale	1,148	190,289
Currants and gooseberries infested with San Jose scale....		2,059
Trees infected by peach yellows	1,098	
Trees infected by black knot	5	1,311
Sprouts infected by black knot	800	
Total	3,476	193,838

Five and one-half acres of badly infested and overgrown nursery stock and three hundred feet of osage orange hedge have been destroyed, and seven thousand four hundred and forty-six feet of osage orange hedge has been treated for San Jose scale.

There appears to be a general disposition on the part of owners of orchards to apply treatment, but during the past year a considerable amount of the spraying was done in such an imperfect manner as to be of little value for holding the scale in check and such treatment has not been accepted by this division as satisfactory. In cases where poor work was done the owners were required to re-spray and in some instances trees have been treated three times before the work was acceptable.

Among the larger orchardists it was found impossible to require another treatment in the spring, as the season was so late that spraying would cause injury to the trees, but agreements have been made that the work will be done in a satisfactory manner this winter.

Owing to the diversity of opinion relative to the remedies to be used for the control of the San Jose scale, it has been considered both desirable and necessary to test the spraying mixtures that were thought to be particularly valuable. The details of these tests will be published in a more extended report, but the results are already being used in making recommendations and requirements for treatment.

It has been deemed desirable to investigate the known outbreaks of the San Jose scale in the state so that a general report can be made of the present condition in the infested localities. In general it may be said that the majority of owners of orchards are fighting the scale, but in the cities and towns that are infested only a slight interest is being taken in the matter at present.

In August, 1903, through the courtesy of Dr. L. O. Howard, entomologist to the United States Department of Agriculture, a shipment of the imported Asiatic ladybird was received for the purpose of starting a colony of this beneficial insect in Ohio. Only three of the beetles survived the trip from Washington, D. C., and one of these escaped, so that but two of the insects were left to start the colony. They were placed in an infested peach orchard in Clermont county. An examination on October 28 showed that twelve beetles were present, one generation having been produced at that time. The question of their ability to withstand the winter and of their future utility as scale destroyers remains to be determined. It is therefore apparent that no orchardist should at present fail to treat his trees in the hope that the beetles will be able to do the work for him.

THE CANKER WORM.

Since the passage of the present law which specifically names the canker worm as one of the dangerously injurious insects, only one petition has been received requesting inspection for this pest. This may be due, in part, to the fact that the damage caused by this insect was considerably less in 1903 than it had been for the past few years. It is doubtful, however, if any very great good would result from the inspection of premises if petitions were filed, for the reason that complaints would not be made until the time for successful treatment had passed. Realizing this fact the assistant inspectors were sent during the month of May to the apple growing sections of the state to advise the owners of orchards relative to prompt treatment for this pest. In this way much assistance and advice was given and many owners were induced to spray early enough to do effective work. Much valuable data were also collected concerning this insect.

In carrying out this work over one hundred and fifty infested orchards were examined containing about thirty thousand trees.

CONCLUSIONS.

The experience during the past year would indicate that certain changes in the present law are very desirable. More latitude should be allowed for the investigation of outbreaks of dangerously injurious insect pests and plant diseases, and for the testing of remedies so that owners can be assisted, in every possoble way, in that warfare against these pests. Statistics show that the acreage of orchards in Ohio is declining, and this is largely due to failure to control injurious insects and diseases so that profitable crops of fruit can be raised. If this work, which is a step toward securing control of these pests, is to accomplish the greatest good to the horticulturist, changes of this character should be made.

A provision should also be made so that official certificates of fumigation can be issued to nurserymen, as this will further safeguard all parties who purchase stock for commercial or ornamental planting.

NOTE.—Since the time of the meeting at Delaware, Mr. J. C. Vergon has sent me samples of the acetate of lead and arsenate of soda that were used in making the arsenate of lead that was applied to his father's orchard last summer. At his request these were submitted to Prof. N. W. Lord, the official chemist of the State Board of Agriculture, for analysis. His report is as follows:

"Report on the analysis of the sample of 'sodium arsenate': Arsenic Pentoxide ($As_2 O_5$), 44.0 per cent.; chlorine, 15.7 per cent. The chlorine is equivalent to 25.9 per cent. of sodium chloride. Report on the sample of lead acetate: Oxide of lead, 58.6 per cent."

This analysis shows that the acetate of lead is of very nearly standard purity, but that the arsentate of soda contained a little over 25 per cent. of common salt. A sample containing over six or seven per cent. of salt should not be used for making arsenate of lead.

Professor Burgess: I would say at this point I have already prepared a short bulletin dealing with the treatment of the San Jose scale in cities, with some suggestions relative to the trees and shrubs that are most immune from its attack, and this bulletin will shortly be published by the Department of Agriculture.

Question: I would like to ask whether treatment for the scale would destroy these ladybeetles, too.

Professor Burgess: No, sir, I think not, for this reason; the treatment for the San Jose scale would be carried on while the trees are dormant during the winter; the lady bettles would be hibernating, in concealed situations, in the grass or growth beneath the tree, and I do not think there would be any damage of that kind to the lady beetles. There is this point: if the spraying were very thorough it might cut off the food supply; but I do not think at the present time the growers should place any dependence on the lady beetles. It remains to be seen whether they will be of any benefit or not. The main point I wish to bring out is that they have been introduced and that we have a few in Ohio.

Mr. Cushman: Is that the only introduction of lady beetles in Ohio?

Professor Burgess: A shipment was also sent to Professor Parrott at the Experiment Station, and they were placed in an orchard in Danbury, Ottawa County, and the last accounts I have were that the beetles had disappeared.

Mr. Houser is here; if he has made a subsequent examination, it will probably show the exact condition.

Mr. Houser: We made an examination about the middle of September, and could see no trace whatever of any of the beetles; either the birds have destroyed them or else they have died; we could find none.

Mr. Shirer: They are sometimes on potatoes, you know, with the potato bug, and on melon vines when the louse appears; now the question is, if we apply the poison to the potatoes and melon vines, whether we are not killing the lady beetle at the same time.

Professor Burgess: I will say that this particular lady beetle is a scale feeder; I don't think it will feed very much on plant lice or eggs of other insects. That is its habit in China, its native home; it feeds almost entirely on scale insects.

Mr. Shirer: How about our ordinary lady beetle?

Professor Burgess: Some of them may be destroyed by the application of arsenicals, but I think it would hardly be wise for any grower to let spraying alone in the hope of allowing the beetles to do the work.

Question: About this preparation of the lime, sulphur and salt wash, I saw an article to the effect that it was prepared by taking the heat of the lime for mixing of the sulphur. If any of you have experimented with that instead of boiling, will you give us your experience?

Professor Burgess: Chemical action between the lime and the sulphur is necessary to form sulphids of lime, as Professor Selby suggested, which have the insecticidal and fungicidal qualities. The heat of the lime that is slaking is not sufficient to carry on this chemical action.

Question: I would like to inquire what variety of plum trees were most subject to the knot.

Professor Burgess: I think probably the Damson was treated more than any other. I will say, however, that this treatment has not been applied as yet by the department—by the inspectors—but it has been applied by the owners.

Mr. Freeman: Have you found a treatment that would cure the black knot.

Professor Burgess: The only treatment is to cut out the knots and burn them.

Mr. Cushman: I feel that in connection with this work about which Mr. Burgess has been speaking—and I have felt ever since we have been trying to do something with the scale—that the great danger, the great loss, that is coming to horticulture is not with the commercial orchardist; it is with the small growers, the lawns, and the shrubbery that adorns them, and with the small fruit garden—they are the ones that are going to meet with the greatest loss from the ravages of the scale. The commercial fruit grower is able to take care of himself, and will; the nurseries will take care of themselves; they have millions of dollars invested in the business and they are bound to protect it, but the man who has only a few fruit trees, a few rows of bushes, a little shrubbery, is the man who is going to receive the greatest loss in proportion to his investment, because he will not make the effort that is necessary to protect himself. You can very readily see if he has to supply himself with the outfit and get all the things necessary to combat the scale for his small number of trees, he will not make the effort to do it. I believe one of the great works for this division of the State Board of Agriculture which we have created is to be a teacher of the public if you please, and so get every one to work to do this thing and to help them in every way possible. The great loss is coming in the ornamental, or the small holdings, not the large ones; and I believe we ought to uphold this department, not only in its orchard and general commercial inspection, but in the department which will make it possible for them to teach the small holdings how best to take care of them. We can not impress this too strongly when we come before the Legislature and ask for this appropriation. I think it is our strongest point, now, for having an appropriation, and I hope when the time comes Professor Burgess may furnish us such material as possible, that we may bring our argument strongly before the Legislature.

Professor Burgess: Along that line I may say I just touched upon it in regard to city infestation. There is a great deal of scale in the cities and there are a great many people, small property owners, whose trees and shrubs are suffering very badly from it. Some of them are interested in keeping their premises in proper condition, but they find themselves in a dilemma; they know nothing about spraying, and they have no outfits with which to carry on the work, and they cannot get anybody who can do the work thoroughly. There is a need at the present time of some one to take up such work, and I believe it could be made to pay in the larger cities to take up such work as a business.

Mr. Cushman: Right here, Professor, don't you believe it would be the right thing that where anybody undertakes to do that they should have a certificate from some proper source as to their qualifications for doing the work—and not let Tom, Dick and Harry use any kind of stuff on the trees, just so they get the dollars for doing the work?

Mr. Hunt: We have a gentleman up in our part of the country who is looking after that interest; his name is Derror.

President Miller: He has been through our country.

Mr. Hunt: They go to a small owner and tell him he is badly infested with San Jose scale. They came to my neighborhood and got one hundred and seventy-five dollars, and they had no scale. They go into the city, to the men of means, with the same story, and tell them they have the scale, and they treat them and get their money.

Mr. Cushman: I believe we ought to look after that.

Mr. Farnsworth: Some of these men came to my place, but I was very busy, and I told them if they would keep on walking fast enough and far enough they would catch a sucker.

While I am on my feet, it occurs to me that we ought to avail ourselves of the Civic Improvement Societies. They are mostly along these lines. It seems to me that this is one of the most important things for them to pay attention to. Of what benefit is it if we induce the people to plant artistically if the scale comes on and wipes it out? I think we are entitled to their co-operation and we ought to take steps to secure it, and I think if we can show them the need of it and the magnitude of the danger which threatens they cannot fail to see the need of giving this a little more attention, and I think we might secure them as very important allies.

A member: I want to say this in regard to spraying. Some of our regular customers, knowing I was spraying, requested me to spray for them, which I did, but one man especially wanted me to spray immediately, and I could not, so he got another man to spray. Afterwards I had occasion to go there and I saw the inspector had made a cross where the trees were to be destroyed, and some were marked to be sprayed. Afterwards I looked at this orchard which had been sprayed and those trees which were marked with a cross were not taken up, and just part of them sprayed, and they are standing there yet. How can we do anything if they won't comply with the law and obey the inspector's instructions?

Professor Burgess: I will say I don't know just which town the gentleman refers to, but two or three years ago there was quite a large amount of work done in cities; two years ago the Legislature failed to make an appropriation in time for the treatment to be carried out. That was when the work was in charge of the Board of Control of the Experiment Station. Since the work has been placed with the State Board of Agriculture no city work has been done except in a way to assist owners as much as possible in protecting their trees. Where owners show a disposition to do the work I have sent my assistants at times to show them how to make the mixture and assist them in every possible way, so that it could be applied properly, to get the desired results. I think this is rather educational, and I believe it is working along the right lines.

In regard to the treating of trees in the cities, I will say that there have been in a number of cities "tree doctors" and so forth, who have imposed on the people to a large extent and have applied remedies which were of no value whatever.

Question: Were instructions sent out from the department that the trees must be sprayed by a certain time?

Professor Burgess: Yes, sir, that was before the amendment to the law was passed, placing it under the Board of Agriculture.

The questioner: That was two years ago?

Professor Burgess: Yes, sir.

President Miller: I will say that one of the agents of this company came to me a year ago and asked that I try some of the mixture at five dollars a gallon. I offered to test a gallon of the mixture and if it was more effectual than mine I would tell him the result. He went on and didn't leave any of the mixture.

It seems that they have an especial field for the gullible among wealthy men in the cities.

Our next will be the report of the librarian. Is Professor Green present?

A member: Speaking of Professor Selby's talk last night, when he said use caustic soda he meant use it with caution. The experience I have had using that makes me say the very best way to use it is to everlastingly let it alone.

President Miller: I don't know whether the Professor is here or not, but I intended to make one remark at the close of his talk last night. He spoke of the leaf spot upon plums and advised the use of the full strength Bordeaux upon plums; he should have cautioned in that respect the use of the full strength only on European varieties; the Japanese and American will not stand it.

Professor Selby: The Japanese are not attacked by leaf spot.

President Miller: Some have been led to spray full strength upon the American, to their sorrow.

Professor Selby: I have never seen it serious upon American sorts. While we are speaking of this spraying, of course you cannot spray full strength for leaf spot with Bordeaux mixture on cherry trees; you have to reduce strength.

President Miller: There is another question I would like to have taken up, and I believe with the consent of the Society we will do so. "Does compressed air furnish an economical power for spraying?" Mr. W. H. Owen.

Mr. W. H. Owen: Last year, after our meeting at Clyde, and after listening to Mr. Loop in regard to compressed air as a power for spraying, I took the opportunity to visit North-East and look closely into his method, and while there I concluded that I had struck the right idea. I went home and installed a compressed air plant of my own. However, Mr. Loop in his hilly country can only employ the smaller tanks for his liquid, and also for his compressed air. I used one hundred and twenty gallon tanks, which meet our requirements much better than the smaller size, inasmuch as it does not require as much moving back and forth to the pumping station.

I have a central pumping station, the same as Mr. Loop, and storage tanks into which I compress the air, and take my mixture into the field. From an economical point of view I will state that I do not believe there is any commercial orchardist but can afford to throw away his old ideas of spraying and introduce the compressed air, from the fact that I with one outfit (I have put in a new one this year) was able to do more and better work than from twelve to fifteen men could do in the ordinary way.

I spray with two lines of hose with a spar, a nozzle on each. You may think it is rather an exaggerated statement, but if you will visit any of these plants that have introduced this system you will be convinced in fifteen minutes or less time than that—about five minutes.

When I took up the idea I will say I followed closely Mr. Loop's idea of the cluster nozzle; I employed twelve nozzles and I saw my man go through the rows, and he would have to give about three passes at a tree as he was passing it, and he could spray two ordinary peach trees, and the third one he would have to stop at in order to catch up, and it suggested itself to me, Why couldn't I arrange those nozzles on a spar? And by this means you can do a more thorough job. I have twelve nozzles on the spraying spar; it is arranged with a lever control valve, so the operator has complete control. It does not require a man of any skill. All that the man really need know is how to turn on and shut off the valve; while to spray in the old way and play up and down the tree you would have to have an expert, or he is going to slight the work. Not only that, I don't care how careful a man is, he will overlook a good many of the branches; that is, he will slight them; they will escape his notice; they will not get the proper treatment they ought to have, while with this spar you can not miss a single branch and twig; it does not matter how small the twig is you are bound to reach it; and the stronger the wind the better it is when using this spar; you can operate as fast as the horses will walk. I am speaking now of treatment for peach trees or ordinary trees in winter. Of course, when it is in leaf it is a different proposition.

From an economical standpoint we have got something that will give the maximum amount of use at the minimum of cost, in the use of compressed air.

Mr. Cushman: How long is this spar?

Mr. Owen: You can make it any height you want. The one that I have is about nine feet.

I will say that Mr. Loop has carts. I have my outfit on a wagon, with a platform about six feet long that extends in the rear, and on this platform the operator stands with his spar. There is a notch in the wagon on the side next the tree; place it in there and you have full control over the situation. That is, he is right up there with his work; he is much better off than if he is on the ground and has to walk; he has better control over the operation.

Doctor Chamberlain: Don't you have to have a driver for the team?

Mr. Owen: Last year my operator did not; I have a good steady team; he didn't have a driver. It was a case of necessity with me; if I hadn't employed that means of spraying I would not have had my spraying finished. The expensive part of spraying is the expensive labor and the horse work; that I save. With this one rig of mine I can go over twenty acres of ordinary peach trees on one side, with one man, in a day, and I don't believe that twelve or fifteen men can cover it in the old way of spraying as well as I can and with less material.

There is another point that I want to emphasize. You think there is an awful waste of material. I used about thirteen hundred gallons less material than I did the season before and I am convinced it consumes much less material.

Question: For what were you using the spray, San Jose scale or leaf curl?

Mr. Owen: I was using it for both, the leaf curl and the San Jose scale.

Doctor Chamberlain: What material?

Mr. Owen: Sulphur, lime.

Question: What is the weight of that spar, filled with liquid and independent of the hose attached?

Mr. Owen: Well, I could not say as to that.

The questioner: Six or seven pounds?

Mr. Owen: Yes, probably more than that.

The questioner: I simply wished to make this point; that is, it is so heavy that you need a rest.

Mr. Owen: *Yes.*

Mr. Pierce: Are these nozzles arranged one above the other on the straight stick—

Mr. Owen: Yes, on a gas-pipe.

Mr. Pierce: Upright?

Mr. Owen: Upright, yes, sir; they are about nine inches apart.

Doctor Chamberlain: How many of them?

Mr. Owen: Twelve I have on this spar; with the old method of spraying you cannot employ exceeding six, possibly eight nozzles. With this you can use one or you can use fifty nozzles; you will have the same pressure. Of course, the distance up gravity will make a greater pressure on the lower nozzle; I turn those partially off and open the top ones wide, so that you get a regular spray for the length of spar.

Mr. Cushman: When your tank and compressor storage go to the field what pressure do you use?

Mr. Owen: I go out with not less than one hundred and sixty pounds, and then you can run anywhere from eighty to one hundred pounds. They will equalize in the two tanks and you will come back with anywhere from seventy to eighty in both tanks, and you blow out the pressure that is in your mixture tank—turn it off from your storage tank and preserve that pressure, so that it won't take so long to pump it up. By the time you get your mixture tank full you have your required pressure on, so that it takes me about fifteen minutes to fill and charge.

Doctor Chamberlain: Can't you run below seventy-five pounds pressure very well?

Mr. Owen: When the mixture is sprayed out you have about seventy to eighty pounds in the tanks.

Doctor Chamberlain: But low pressure will do good spraying?

Mr. Owen: Some run it down as low as sixty, but I usually try to keep it up about eighty; when I finish I have about eighty pounds pressure.

Doctor Chamberlain: The principle is, that it is easier to carry compressor tanks than to carry an engine?

Mr. Owen: Yes. I would like to say that after I introduced this plant, plants centrally located have been established, and all the farmers have to do will be to purchase the tanks, and he can then do his own spraying. He can go to these central stations and get his mixture and his power.

I think that is the coming way of spraying. The individual orchardist can not afford to purchase one of these outfits unless he has a very large orchard, and they will have to form a company or employ a central station and radiate from that. It would not then require much more of an expenditure to get an outfit than it would to get the ordinary spray pump.

Mr. Pierce: Would a traction engine furnish the power?

Mr. Owen: I have a ten horse-power steam boiler and engine; I have seen gasoline engines employed.

Question: Threshing engines could be used?

Mr. Owen: Yes, sir; Mr. Loop employs a threshing engine.

Doctor Chamberlain: Couldn't he use a regular pumping engine, with which he forces his water up into the tanks for his waterworks?

Mr. Owen: You can employ any power to run, steam or gasoline.

President Miller: In the matter of the mixture, a steam boiler is essential.

Question: Tell us at what price the companies furnish the materials to the growers?

Mr. Owen: I do not know as there is any established price. Last year I made about five thousand gallons, and I supplied it to my neighbors at two cents a gallon.

President Miller: That was the fifteen and fifteen mixture?

Mr. Owen: Yes, sir. This year I have taken contracts for doing spraying work, applying the mixture at three cents a gallon.

Mr. Pierce: How far can you draw this stuff and keep it warm enough to use.

Mr. Owen: Any distance; it will stay warm a long time; you see, it only takes about five minutes to blow out the contents.

You can draw it two or three miles if you want to.

President Miller: Will Mr. Loop tell us something of this?

Mr. Loop: Mr. President, we are in the business of manufacturing; we have outfits for sale; I think that fact will excuse me trom discussing the question.

Mr. Cushman: Go ahead; we don't care anything about that.

Question: How do you agitate your mixture and keep it in suspension?

Mr. Owen: On my first rig the air pipe went under the bottom of my tank, and I had no difficulty this last season with the lime, sulphur and salt in the agitation. But on my rig I am getting now I have introduced a gas-pipe nearly the full length of my tank on the under side, and about two inches from the bottom, or three inches from the bottom, with the holes on the under side, so that the compressed air comes in that pipe and keeps it thoroughly agitated the whole length of the tank.

Professor Selby: In view of the fact, I believe, that I was responsible in a measure in the presenting of the Loop method to the Ohio State Horticultural Society at its meeting two years ago, I wish to say that Mr. Loop, through his kindness of heart, has placed me under very great obligations to him in giving information at that time, and I believe that this method, which first of all served Mr. Loop's own personal interest, and which they are now offering to the public, is a business proposition upon which they are entitled to a reasonable profit.

This is a method which any one contemplating extensive spraying, or having difficulty with labor, ought to consider very carefully. I want to bear testimony of my confidence in the method.

Mr. Farnsworth: There is one point that I would like to inquire about more fully. There has been a little fear expressed on some quarters as to the danger of explosion. We want to know the worst. A good many of us are investigating this matter. Is there any practical danger of the tanks giving way, of exploding and hurting the men around?

Mr. Loop: I have used my tanks four years and they are apparently as good as new; I have used the full pressure.

Mr. Pierce: Isn't it a fact that compressed air doesn't explode? It simply opens a place; it is not like steam; such explosions do not occur.

President Miller: They don't expand so quickly.

Mr. Owen: Regarding the liability of explosion, I don't believe that most people realize the power that is in there, that is confined in one of these tanks. If it would let go it would surely be disastrous; there is no question about it. The tanks which I got last year are twenty-four inches in diameter and five feet long. I would most assuredly recommend a smaller diameter, not exceeding twenty inches in diameter, and get them as long as you want. The tanks I bought were under a strict guarantee.

Question: How much pressure?

Mr. Owen: Two hundred pounds pressure. I have one that was tested up to two hundred and fifty. They did leak, each one of them a little, and would run down about ten pounds over night; as they were under strict guarantee—manufactured by Wolfe under contract—and were galvanized, they were sent back to him; whether they will leak when returned I do not know.

We found a firm in New York who will make us a tank. The weak point is in the convex end; it is liable to bulge out. We are getting a quarter inch iron, and the shell of the tank is a little less in thickness than that.

I know that Mr. Lathem put a test of two hundred and sixty-five pounds on one of his tanks and it bulged the tank right out. In compressed air I thought there might be an opening and escape of the compressed air, and that would be all there was to it, but I know the result would be disastrous from the fact that there is a little concern in Sandusky that employs compressed air in a cylinder to blow the whistle, and the bottom of that gave out one day and it went up several hundred feet in the air and blew a hole down through the floor. The convex end blew out and the tank went right up into the air. That was last year. By using a tank with a guarantee of two hundred or two hundred and fifty pounds, and only using one hundred and fifty or one hundred and sixty pounds, I do not think there is any probable danger resulting from it.

But there is another point. After you have finished using your tanks for the season you should carefully clean them out and run some oil in them, and especially around the convex end, so that the oil will stay down in there, and it will possibly keep them from rusting. And again in the spring don't start up without testing your tanks, giving them a two hundred pound test, if you are only going to use one hundred and sixty pounds, so that you will know they will stand that.

Mr. Loop might give us his experience. He has employed a seamless drawn tank; he might tell us something about that; it might be of interest.

Mr. Loop: We bought one of those cold-welded tanks, as they are called; they are guaranteed to stand two hundred and fifty pounds; several of them gave out at one hundred and fifty; we did not have any serious consequences, but might easily have had; the ends bulged out and that loosened the cover and the air escaped without any further trouble.

A gentleman: The year before last I got a New York sprayer of four gallons' capacity, carried with a strap over the shoulder, and it was no work at all. The company tried to get me to be an agent and sell it. They sent me one and I paid four dollars, and if I didn't sell any I was to pay two dollars more. I sprayed my own trees and it worked very fine, but instead of selling any to other people they wanted me to spray for them, and they would pay me for it. I have done so, and have done very good work. For people in town I think this kind of sprayer would be very handy, and would do them great deal of good. If they will get those brass sprayers from Geneva, New York—I forget the company now —they will find it is a very nice thing. I recommend it to others.

President Miller: If Professor Green is not present we will have the report of the Executive Committee. Has the Executive Committee any further report?

Mr. Cushman: I do not think we have any further report to make.

President Miller: One of the questions that is among our fruit problems for 1904, and we would like to spend just a few minutes on it. Will Mr. Vergon tell us whether it will pay commercial orchardists to prepare their own arsenate of lead?

Mr. Vergon: Mr. Chairman, we have found that it does. The ingredients that we use for fifty gallons of water are:

Arsenate of soda	13 ounces.
Acetate of lead	33 ounces.

This is all very easily diluted separately, even in cold water; it will dilute a little better if the water is a little warm, and the advantage of this, besides being cheaper than to buy the Disparene by the keg, is that you can dilute it so easily. Our experience is—I don't know whether with Disparene, but it is certainly all alike—in these hundred-pound kegs, that it is in a tough, putty shape that you can hardly dilute. Even if there is only that difference I would be in favor of making my own, and there is quite a difference in saving.

Mr. U. T. Cox: Can you give us the prices of them?

Mr. Vergon: I don't believe I can.

Professor Burgess: I will say that for some arsenate of lead that was made from raw materials, the arsenate of soda cost eight and one-half cents a pound, and the acetate of lead ten and one-half. I do not know the purity of the materials.

Mr. Vergon: We found it was quite a saving, anyhow, in addition to being easier to dilute.

Professor Burgess: The best method to make the arsenate of lead is to weigh your material out; weigh your arsenate of soda, dissolve it in water in one bucket; weigh out your acetate of lead, dissolve it in another bucket, and pour the two together into the tank.

There is a thing to be noted in making arsenate of lead, and that is, that you must be sure your materials are pure. Acetate of lead which you get on the market is usually fairly pure, but arsenate of soda is often adulterated with common salt. Salt looks very much like the arsenate of soda. The salt is not only of no use as an insecticide, but it takes a certain amount of the lead to neutralize it. If you get an impure sample of arsenate of soda, one that is adulterated with salt, you are liable to have an excess of arsenic, and your foliage will be burned. That is a point that should be guarded against very carefully, when you are making arsenate of lead.

There is another point: the arsenate of lead and the arsenate of lead mixture are two different things. For instance, you take, as Mr. Vergon says, thirteen ounces of arsenate of soda and thirty-three ounces of acetate of lead, and that makes in round numbers three pounds of arsenate of lead mixture; but it only makes half that amount of actual arsenate of lead.

Mr. Farnsworth: I fail to see any very decided saving. I don't remember exactly the price we paid for arsenate of lead; I think probably Brother Cox could tell us, but it was cheaper; it was, I think, considerably less than ten cents per pound that we pay for the arsenate of lead in one hundred pound kegs.

Doctor Chamberlain: There is no difficulty whatever in mixing it; it is very much like white lead ground in oil, only that it mixes up quickly in the water; we haven't the least difficulty. We buy it in one hundred pound kegs and simply scoop it out with a paddle and thin it right down in water in a moment, and that is all there is of it. Costs less than a cent a gallon for the mixture of fifty gallons.

Mr. U. T. Cox: *Lappenberg* puts up an arsenate of lead, and his price early in the season was eight and one-half cents. It went up to nine and one-half and ten later in the season.

Professor Burgess: I will say that I took a sample of arsenate of lead—I think it is from this firm that you speak of—and we had it tested and there was some free arsenic in it. In any work that I have done with arsenate of lead I have always preferred to use the Disparene. Disparene is made by a firm that is reliable and the chemist who has charge of that work is the man who brought out the utility of arsenate of lead as an insecticide—in fact, he knows more about it than any other chemist, and a man purchasing that material is sure of what he is getting.

Another point in regard to using the prepared material in preference to the home-made, and that is you are sure of what you are getting, and if you buy the raw materials and make it there is no assurance that you are getting pure raw materials, even if your local druggist does say they are up to a certain grade; you can not always depend upon the local druggist in this matter, although I do not think they have any intention of being dishonest.

Mr. Vergon: I will just say we do not buy this from the local druggist. We were advised by Professor Green of an honest man to buy from, and I think we got the pure sstuff.

President Miller: We will now have the treasurer's report:

Treasurer's Report.

R. J. Tussing, *Treasurer.*

In account with Ohio State Horticultural Society.

1902.		Dr.
Dec. 18,	N. Ohmer, for services rendered	$ 60 70
" 18,	E. H. Cushman, for services rendered	2 60
" 18,	J. F. Hicks, for services rendered	7 50
"	T. S. Johnson, for services rendered	5 35
" 18,	W. R. Lazenby, for services rendered	8 75
" 22,	M. E. Sweet, for services rendered	4 75
" 23,	C. L. Whitney, for services rendered	11 70
" 30,	E. G. Cox, for services and premium	22 80
" 30,	U. T. Cox, for premium	5 50
" 30,	H. H. Aultfather, for services rendered	9 85
" 30,	H. L. Persing, for premium	3 00
Dec. 30,	M. E. Sweet, for premium	4 00
" 30,	E. M. Woodard, for premium	8 00
" 30,	C. W. Counter, for premium	2 00
" 30,	R. A. Hunt, for premium	2 00
" 30,	M. L. Pershing, for premium	4 00
" 30,	W. A. Hall, for premium	16 00
" 30,	Wm. Miller, for services and premium	44 52
" 30,	W. W. Farnsworth, for premium	22 00
" 30,	W. W. Farnsworth, salary for Dec. 31, 1902	111 50
1903.		
Jan. 6,	Armstrong & Okey, sten	75 50
" 8,	R. A. Hunt, balance on premium	10 00
" 19,	Isaac Freeman, services rendered	12 05
Feb. 4,	P. J. Parrot, services rendered	4 50
" 11,	L. R. Taft, services rendered	11 75
" 11,	W. J. Green, services rendered	27 71
" 11,	W. W. Farnsworth, services rendered	27 31
Mar. 30,	Vrooman & Anderson, services rendered	214 20
June 2,	W. W. Farnsworth	90 53
July 29,	W. W. Farnsworth, salary	100 00
Sept. 28,	W. E. Kneale, printing	8 00
" 28,	E. M. Woodard, services rendered	40 00
Nov. 7,	E. M. Woodard, salary	75 00
		$1,053 07

R. J. Tussing, *Treasurer.*

In account with Ohio State Horticultural Society.

1902.		Cr.
Dec. 18,	Received of N. Ohmer, balance in treasury	$ 387 19
1903.		
Jan. 6,	Received warrant on State Treasury	321 45
Mar. 30,	Received warrant on State Treasury	307 52
May 19,	Received of W. W. Farnsworth, Membership fees	101 00

June 6, Received warrant on State Treasury	90 53
Sept. 4, Received of E. M. Woodard, Membership fees	6 00
Oct. 14, Received warrant on State Treasury	138 53
Total receipts	$1,352 22
Total paid out	1,053 07
Balance in treasury	$ 299 15

Delaware, O., Dec. 11, 1903

President Miller: We will now have the report of the auditing committee.

Report of Auditing Committee.

We, the committee, after carefully inspecting the Treasurer's books, find them correct in every detail.

R. A. HUNT.
G. W. SLOAN.
E. G. COX.

Professor Selby: I move that the report be received and the committee be discharged.

Motion seconded and unanimously carried.

President Miller: We will take up the report of the special committee in reference to forestry.

Report of Committee on the Organization of a State Forestry Society.

Mr. President:

Your committee appointed to take under consideration the question of organizing a State Forestry Society beg leave to report as follows:

It is the sense of the committee, that such a society should be formed and we recommend the following articles as a constitution for the society:

It is further recommended that all who sign this constitution at this meeting be regarded as charter members, and that the annual dues for the coming year be omitted in case of all charter members.

CONSTITUTION.

ARTICLE 1.—*Name.* The name of this association shall be "The Ohio State Forestry Society."

ARTICLE 2.—*Object.* The object of the society is to develop a public interest in Forestry, by disseminating knowledge of trees and tree-planting, by encouring the preservation and improvement of existing woodlands and forests; by inciting a more general use of trees for shelter, shade and ornament, and the growing of trees as farm crop; and by co-operating as far as possible in the work of the United States Bureau of Forestry and that of the American Forestry Association.

Article 3.—*Membership.* Any person may become a member of this society by the payment of an annual due of one dollar, which payment shall entitle him to receive the annual publications of the society.

A payment of ten dollars entitles any member to life membership.

Article 4.—*Owners.* The officers of this society shall be a president, vice-president, and secretary-treasurer, who with two elected members shall constitute the executive committee. The officers shall be elected at the annual meeting each year by ballot, and shall perform the duties usually appertaining to their respective offices.

Article 5.—*Meetings.* Unless otherwise directed by the society, the annual meeting shall be held at such time and place as the executive committee may designate.

Other meetings may be called at the discretion of the executive committee.

Article 6.—*Quorum.* Ten members present at any regularly called meeting shall constitute a quorum for the transaction of business.

Article 7.—*Amendments.* This constitution may be amended by a two-thirds vote of the members present at any regular meeting.

WILLIAM R. LAZENBY,
W. W. FARNSWORTH,
W. J. GREEN,
J. H. DAYTON,
R. L. RENSHAW,
Committee.

And thereupon it was moved that the report be adopted and the committee be discharged.

Motion seconded and carried.

President Miller: I understand that a good many wish to get away on the train leaving about twelve o'clock, and I believe we ought to take up the election of officers immediately, and hear the other reports later.

I will appoint Messrs. Owen and Sloane as tellers.

Gentlemen, prepare your ballots for the election of a president. I want to announce positively that I will not be a candidate and will not accept office for another year.

Mr. Cushman: Can we read a resolution while the ballots are being prepared?

President Miller: Go ahead.

Mr. Cushman: This is a resolution that was referred to the committee last night. It seems it was referred to the Executive Committee while I was under the impression it was referred to the Committee on Final Resolutions. It does not, however, make very much difference, for Mr. Ballou and I are the only representatives of either committee, and are both on the same committees.

We beg to report favorably on this resolution.

Resolution Favoring Ohio State University.

Resolved, That the Ohio State Horticultural Society, recognizing the valuable work that is being done by the College of Agriculture of the Ohio State University for the agricultural and horticultural interests of the state, and realizing that there is need of more liberal support of the same by the state, asks that the incoming legislature provide sufficient appropriations for the University so that the College of Agriculture may receive the support necessary for its maintenance and growth; and that the Executive Committee of this society is instructed to use its influence in securing the same.

E. H. CUSHMAN,
F. H. BALLOU.

Mr. Cushman: We move the adoption of this resolution.

Professor Selby: I would like to have moved the adoption of the resolution. I second the motion.

Motion unanimously carried.

And thereupon a ballot for president was taken, resulting in the election of W. W. Farnsworth.

President Miller: Mr. Farnsworth is elected your president.

Will you have his inaugural address now or later?

(Cries of "Now, Now," "Speech.")

President-elect Farnsworth: Mr. President and Gentlemen: It is too late for speeches now, but I do say that it certainly is an honor to be called to the chair that has been filled by Warder, Baetam, Campbell, Tryon, Ohmer, Cushman and our own present worthy incumbent, Miller; but it is an honor I had hoped might pass to some one else.

It is a great responsibility and brings with it a great deal of work. The past two incumbents have performed more hard, conscientious work in that office than many of you imagine.

And, now, just a word to the members in accepting this trust. I do so with the implied understanding of your co-operation and assistance. A good many of us are a little too much like the average church goer; we think we do our duty by going to church on the Sabbath and then go home and let the pastor and one or two of the deacons do all of the work in the interim. There is plenty for us to do; there are breakers ahead; we must have your influence. Members of the Legislature must be seen. There is nothing dishonorable in doing so; it is just simply making known your wants and asking for them. I hope and trust that all the officers of this Society will accept the co-operation of the lay members during the coming year. Only by so doing can we hope to secure our just share of recognition. I thank you. (Applause.)

President Miller: Prepare your ballots for the election of a vice-president.

And thereupon a ballot for vice-president was taken, resulting in the election of U. T. Cox.

President Miller: Mr. U. T. Cox has been elected your vice-president.

Doctor Chamberlain: I move that the rules be suspended and that the president be instructed to cast the vote of the Socieety for the present secretary, Mr. Woodard.

Motion seconded and unanimously carried.

And thereupon the president cast the entire vote of the Society for Mr. E. M. Woodard, and he was declared the duly elected secretary for the coming year.

Professor Lazenby: I move that the rules be suspended and that the the president be instructed to cast the vote of the Society for the present treasurer, Mr. R. J. Tussing.

Motion seconded and unanimously carried.

And thereupon the president cast the entire vote of the Society for Mr. R. J. Tussing, and he was declared the duly elected treasurer for the coming year.

President Miller: Let the members from the various ad interim districts select their own candidates and report them at once.

And thereupon the various districts were called, and the following names announced:

1. C. C. Sterling, Grand Rapids.
2. Isaac Freeman, Tippecanoe City.
3. A. Shirer, Dayton.
4. M. J. Persing, Clyde.
5. W. R. Lawrence, Marion.
6. R. L. Renshaw, Lancaster.
7. R. A. Hunt, Euclid.
8. L. B. Pierce, Tallmadge.
9. J. D. Imlay, Dayton.
10. J. A. Lawrence, Harlem Springs.

And thereupon it was moved that the names above announced be elected as the members of the ad interim committee for the districts given.

Motion seconded and unanimously carried.

President Miller: We will now have the report of the Awarding Committee. The first will be fruit.

Mr. Montgomery: In making our awards the committee adopted the rule that wherever San Jose scale was found on the fruit, that fruit would be ruled out. The committee will take it no disrespect if you go back on that rule. This Society has never pronounced itself on that subject.

Report of Awarding Committee on Fruits.

APPLES.

Rome Beauty—First, U. T. Cox; second, J. C. Vergon.

Baldwin—First, H. H. Aultfather; second, T. S. Johnson.

Belmont—First, T. S. Johnson; second, E. M. Woodard.

Ben Davis—First, J. C. Vergon; second, U. T. Cox.

Grimes Golden—First, U. T. Cox; second, F. S. Barr.

Jonathan—First, J. C. Vergon; second, F. S. Barr.

Northern Spy—First, F. S. Barr; second, E. M. Woodard.

Peck's Pleasant—First, J. C. Vergon; second, W. W. Farnsworth.

Rambo—First, T. S. Johnson; second, W. W. Farnsworth.

Red Canada—First, W. W. Farnsworth; second, T. S. Johnson.

R. I. Greening—First, T. S. Johnson; second, W. W. Farnsworth.

Roxbury Russet—First, T. S. Johnson; second, W. W .Farnsworth.

Stark—First, J. C. Vergon; second, W. W. Farnsworth.

Wine Sap—First, M. A. Hagler; second, U. T. Cox.

York Imperial—First, Isaac Freeman; second, U. T. Cox.

Collection, three varieties—First, U. T. Cox; second, J. C. Vergon.

Collection, ten varieties—First, U. T. Cox; second, W. W. Farnsworth; third, T. S. Johnson.

PEARS.

Best Plate Market—First, (Bosc.), T. S. Johnson; second, (Anjon), R. A. Hunt.

Anjon—First, W. W. Farnsworth; second, T. S. Johnson.

Anjonleme—First, R. A. Hunt; second, W. W. Farnsworth.

Kieffer—First, T. S. Johnson; second, J. C. Vergon.

Lawrence—First, W. W. Farnsworth; second, T. S. Johnson.

Display—First, T. S. Johnson; second, W. W. Farnsworth.

GRAPES.

Display—First, E. M. Woodward.

Plate for Desert—First, R. A. Hunt.

Seedlings called Liberty, exhibited by A. S. Cruikshank; red apple, medium size, good form and color, very firm, quality good.

Mr. Freeman exhibited a Russian variety, which was one of several received from Prof. Budd, of Iowa. Tree said to be a strong grower and hardy; apple of medium size, good color and quality; seems worthy of further trial.

Olympia, grown in the state of Washington, said to be an improved Baldwin, and exhibited by W. W. Farnsworth; high color, larger than our Baldwin, quality about the same as our Baldwin; form not as good as our Baldwin. We think worthy of trial.

Whidden, grown in Washington and exhibited by W. W. Farnsworth. Not a very attractive color; fair quality; very firm; probably a good keeper.

Seedling exhibited by L. B. Pierce. Medium size; color not extra good; quality good, but not extra.

Opalescent, exhibited by McNarry & Gaines. Size large, color extra good; quality good; very worthy; form good.

Seedling plum, grown by Henry W. Miller, Clyde, O. Kept in ordinary storage; said to hang on till frost; Damson type; little wilted, but edible; blue; fair size; slightly astringent; said to improve in cooking.

Peaches, Rockey, exhibited by McNarry & Gaines.

Nut, Hickory, exhibited by M. J. Persing, Clyde, O. Large size; quality good.

SUPPLEMENTAL REPORT.

Apples for name were exhibited by E. S. Tussing, Prof. Beech, C. H. Ochs, U. T. Cox and W. W. Farnsworth. These were taken to the Experiment Station for study, but could not be identified. Specimens were also sent to Pomological Department, Washington, D. C.

A pear was exhibited by F. F. Bernard, Painesville, O., called Elvira; quality fair and apparently a good keeper.

Seedling exhibited by U. T. Cox, about the size and form of Winesap; color similar, but not quite as bright; good to extra good quality.

R. A. Hunt exhibited three varieties grown in state of New York, Baxter, McIntosh and Gideon.

Prof. Beach exhibited apple grown in New York.

Ohio Experiment Station exhibited twenty varieties apples.

O. P. BLACKMAN,
C. W. WAID,
CAREY W. MONTGOMERY.

Professor Lazenby: I move the report be adopted.

Motion seconded and unanimously carried.

President Miller: The Awarding Committee's report on flowers.

Report of Awarding Committee on Flowers.

A vote of thanks and $5.00 to Jos. Cunningham, of Delaware, to show the appreciation of the society for his efforts in decorating the hall.

F. E. CARR,
L. B. PIERCE,
W. N. SCARFF,
Committee.

President Miller: And the report of the Awarding Committee on vegetables.

Report of Committee on Vegetables.

The Committee on Vegetables offer the following report:

E. G. Stockman was awarded first prize on display of potatoes; B. F. Upham, second prize on display of potatoes.

A fine sample of Carman No. 3 was displayed by W. W. Farnsworth, also a fine sample of a new variety named Crawford, by Mr. Crawford. This sample resembles Beauty of Hebron, and from appearances will be an acquisition to the list of good varieties.

The display of vegetables we deem hardly worthy of the first prize offered by the association, and therefore recommend that E. G. Stockman be awarded second prize on vegetables.

E. S. TUSSING,
A. SHIRER,
Committee.

President Miller: The question will be upon the adoption of the reports of the Committees on Flowers and Vegetables.

And thereupon it was moved that the reports be adopted.

Motion seconded and unanimously carried.

President Miller: Our president-elect has suggested that I bring to the attention of the Society just one matter. Mr. Cushman has been chairman of the Executive Committee for a good many years, and those of us who have been on the inside and know the workings of the Society know that we cannot get along without him there, but, fortunately for him, he happens to be a brother-in-law of Mr. Farnsworth, and Mr. Farnsworth feels a little delicacy about keeping the office in the family. Perhaps a little word of encouragement on the part of the Society would relieve our president-elect of his embarrassment.

SecretaryWoodard: It seems to me we ought to keep the present chairman of the executive committee just where he is, and, therefore, I move that we request the appointment of Mr. Cushman.

Motion seconded and unanimously carried.

President Miller: The next will be the selection of our next place of meeting.

And thereupon invitations were extended from the cities of Columbus, Mansfield and Chillicothe.

And thereupon a ballot was taken for the selection of the place of next meeting, resulting in the choice of Chillicothe.

And thereupon it was moved that the sum of two dollars be paid to the janitor for extra services rendered during the meeting.

Motion seconded and unanimously carried.

Secretary Woodard: There is another matter. I would like to say that the gentlman who has had charge of our exhibits has devoted his time, and I for one feel that he should be reimbursed, and I, therefore, move you, sir, that the Society give Mr. F. H. Ballou, for his work in that regard, the sum of five dollars.

Mr. F. H. Ballou: I did not do it because of any desire for remuneration; I did it because I liked it.

Motion seconded and unanimously carried.

President: I am reminded that the committtee on final resolutions have not reported; let us have that report.

Report of Committee on Final Resolutions.

Whereas, The 37th annual meeting of the Ohio State Horticultural Society has been a successful one in every particular—one of interest and help to all of its members—therefore, be it

Resolved, That the members of said society express their thanks to the citizens of Delaware and Delaware county, for their kind, friendly greeting and cordial hospitality; to the press of Delaware and The Ohio Farmer for their

timely notice and support; especially to Messrs. F. P. and J. C. Vergon for their unreserved efforts to promote the interests, welfare and success of the society at this place; to the representatives of the Ohio Wesleyan University for interesting and helpful addresses; to President Miller for his able efforts in guiding and directing the work of the society, and for the courteous and able manner in which he has presided at our sessions; to the various members who contributed valuable papers and addresses; to the Committee on Fruits, which, at a real sacrifice of time and thought, labored upon the unusually large exhibit of fruit; and to each and every one contributing to the ultimate success of the meeting.

Signed
E. H. CUSHMAN,
F. H. BALLOU.

Mr. Tussing: I move that the report be adopted.

Motion seconded and unanimously carried.

Mr. Montgomery: I move that a nice basket of apples be made up and sent to the Quartette.

Motion seconded and unanimously carried.

Mr. Montgomery: I move that if Chillicothe does not guarantee to furnish the hall and entertainment necessary, the executive committee be authorized to change the place of meeting.

Motion seconded and unanimously carried.

Mr. Shirer: I move we adjourn.

President Miller: Before putting this motion I wish to thank the Society and the members for their uniform courtesy and kindness during my incumbency, and to say that the acquaintances formed and the associations are the pleasantest in my life.

Motion seconded and unanimously carried.

And thereupon a sine die adjournment was taken.

Report of Executive Committee on Extending Usefulness of State Horticultural Society.

The Executive Committee of the State Horticultural Society, realizing that an effort should be made to increase the usefulness of the Society, met at Columbus, O., January 12th and 13th (the date on which was held the State Farmers' Institute). After several meetings, and after consultation with members of the Society present at the institutes and acting under authority granted by Article X of the constitution, the Executive Committee prepared the following memorial to be presented to the State Board of Agriculture.

WHEREAS: At the meeting of the Ohio State Horticultural Society held at Delaware, O., December 9-11, 1903, the sentiment was expressed that the usefulness of the Society would be enhanced by a closer union with the State Board of Agriculture.

Therefore, We, the Executive Committee and members of the State Horticultural Society, present at the State Farmers' Institute, request your Honorable Board to take such action as is necessary to secure sufficient appropriation to create a "Division of Horticulture" in your Board. We

Therefore, Request your Board to create such a division, the executive officers of which shall be selected by the Ohio State Horticultural Society in such manner as it may provide, such selection to be approved by the State Board of Agriculture.

We further request your Board to provide office conveniences for said executive officer.

Signed:

W. W. FARNSWORTH, Pres.
U. T. COX, Vice Pres.
E. M. WOODWARD, Sec'y.
E. H. CUSHMAN, }
SAMUEL TAYLOR, } Executive Committee
WM. MILLER, }
F. H. BALLOU,
W. G. FARNSWORTH,
A. D. SELBY,
W. J. GREEN,
C. H. MCCORMICK,
CAREY W. MONTGOMERY,
W. I. CHAMBERLAIN.

The foregoing "memorial" was presented to the State Board of Agriculture and later received favorable action and support by said Board.

With the advice of President W. W. Farnsworth, the secretary wrote to about 75 members of the Ohio State Horticultural Society, asking them to write to their respective senators and representatives at Columbus, urging them to support the measure by granting the necessary appropriation. He also wrote to the secretary of each local horticultural society in the state, asking them to pass resolutions favoring the plan.

Of the many replies received two members have expressed themselves as opposed to the method of procedure and only one local society.

LIST OF
HORTICULTURAL SOCIETIES IN OHIO.

NAME	PRESIDENT	SECRETARY	DATE OF ORGANIZATION	MEMBERS
Clark Co.	Wm. Scarf New Carlisle	A. E. Humphreys Mad River	Feb. 15, 1896	100
Columbus	W. R. Lazenby Columbus, O. S. U.	V. H. Davis Columbus	May 12, 1845	75
E. Cuyahoga	F. B. Tracy Euclid, O.	Mrs. J. E. McFarland Wickliffe, O.	Feb. 12, 1886	37
Greene	M. A. Hagler Xenia	M. H. Rogers Jamestown	Mch. 29, 1890	20
Holmes	Rev. J. C. Elliott Millersburg	J. G. Bilderhack Millersburg	1893,	56
Lake	J. D. Merriman Painesville	Mrs. A. D. Carlton Mentor	Mch. 19, 1881	38
Lucas	J. E. Wilcox Maumee	E. M. Warner Rossford	Dec. 2, 1876	95
Miami	John Pierce Troy	Ida Drake Piqua	April, 1882	60
Montgomery	N. H. Albaugh Tadmore	D. Berger 231 Fourth St., Dayton, O.	Mch., 1867	65
Muskingum	S. R. Moore Zanesville	A. L. Pierce Zanesville	Jan. 15, 1869	60
Portage	L. A. Reed Ravenna	Rev. Andrew Wilson Ravenna	Feb. 1887	80
Ross	S. H. Hurst Chillicothe	W. D. Winchell Chillicothe		25
Stark	S. H. Rockhill Alliance	Mrs. S. O. Eggert Massillon	Jan. 1879	100
Summit	C. M. Gaylord Munroe Falls	Miss Nellie Teeple Akron	Jan. 30, 1882	45
Warren	J. M. Snook So. Lebanon	Sylvan A. Lewis Lebanon	Feb. 1867	60
Williams	Joseph Dickenson Bryan	O. R. Caldwell Bryan	Oct. 2, 1875	100
Wood	L. S. Rogers Center Township	E. A. Whipple Bowling Green	Jan. 28, 1898	120
Fruit Ridge Hort. Soc.	W. C. Gray Clyde	Miss Alice Storer Clyde	1899	75

(This list may be only a partial one and the secretary will be glad of corrections or further information. E. M. W.)

LIST OF MEMBERS

OF

OHIO STATE HORTICULTURAL SOCIETY.

A

Name.	Town.	County
Albaugh, N. H.	Phoneton	Miami
Allen, C. W.	Erie, Mich.	
Aultfather, H. H.	Minerva	Stark

B

Baker, C. D.	Stoutsville	Fairfield
Ballou, F. H.	Newark, R. D. No. 1	Licking
Bashford, J. W.	Delaware	Delaware
Barr, Frank	Amanda	Fairfield
Beebe, W. H.	Ravenna	Portage
Bement, Sam'l	Toledo	Lucas
Beaver, J. G.	Cincinnati St., Dayton	Montgomery
Black, R. J.	Bremen	Fairfield
Blackman, O. P.	West Park	Cuyahoga
Brawley, E. H. & Son	Amesville	Athens
Bridgeman, Q. N.	Syracuse	Meigs
Brown, R. H.	Oxford	Butler
Buechly, E. M.	Greenville	Darke
Burgess, A. F.	Columbus	Franklin
Bogue, Nelson	Batavia, N. Y.	

C

Carr, F. E.	West Park	Cuyahoga
Carpenter, J. E.	Republic	Seneca
Chamberlain, W. I.	Hudson	Summit
Chatfield, R. C.	South Point	Lawrence
Clark Co.	Horticultural Society	
Clymonts, T. S.	Cleveland (Broadway)	Cuyahoga
Cole, W. B.	Painesville	Lake
Cox, E. G.	Rockwood	Lawrence
Cox, U. T.	Rockwood, R. D. No. 1	Lawrence
Culbertson, E.	Grand Rapids	Wood
Cooper, W. A.	Gypsum	Ottawa
Counter, C. W.	Toledo	Lucas
Crary, W. R.	Willoughby, R. D. No. 2	Lake
Crawford, Matthew	Cuyahoga Falls	Summit
Crawford, S. C.	Proctorville	Lawrence
Cushman, E. H.	Sylvania	Lucas
Courtright, Silas	Lancaster	Fairfield

D

Name	Town.	County
Davis, V. H.	Horticultural Hall, Columbus	Franklin
Daven, Fort	Clyde	Sandusky
Davidson, C. M.	Huntington, W. Va.	
Dayton, J. H.	Painesville	Lake
Dishong, U.	Hoytsville	Wood

E

Name	Town.	County
Eaton, J. P.	Proctorville, R. D. No. 1	Lawrence
Eaton, L. D.	Labelle	Lawrence
Elliott, Albert	Defiance	Defiance
Einhart, F. S.	Clyde	Sandusky
Everett, Henry A.	720 Electric Bldg., Cleveland	Cuyahoga

F

Name	Town.	County
Farnsworth, W. W.	Waterville	Lucas
Farnsworth, W. G.	Waterville	Lucas
Ferry, N.	Wickliffe	Lake
Finney, T. T.	Millersburg	Holmes
Flanders, O. H.	Tiffin	Seneca
Foster, Thos. B.	Glendale	Franklin
Freeman, Isaac	Tippecanoe City	Miami
Fulton, W. B.	Kirkwood	Shelby

G

Name	Town.	County
George, Robert	Painesville	Lake
Gill, S. R.	Port Clinton	Ottawa
Gill, Geo. W.	287 East Broad St., Columbus	Franklin
Grau, G. M.	Lucas	Richland
Gray, W. C.	Clyde	Sandusky
Green, W. J.	Wooster	Wayne
Green, F. L.	Sedalia	Fayette

H

Name	Town.	County
Hall, W. C.	Clyde	Sandusky
Harms, L.	Euclid	Cuyahoga
Harris, W. C.	Rossford	
Harsh, D. D.	Minerva	Stark
Haugh, T. F.	Bascom	Seneca
Hegler, M. A.	Xenia, R. D. No. 1	Greene
Hill, S. L.	Berlin Heights	Erie
Hills, V. T.	Delaware	Delaware
Hoffman, J. C.	Lancaster, Box 202	Fairfield
Houser, J. S.	Wooster	Wayne
Hunt, R. A.	Euclid	Cuyahoga
Hitchcock, Peter M.	Scofield Bldg., Cleveland	Cuyahoga
Hutchinson, Fred	Clyde	Sandusky
Hyde, G. H.	Port Clinton	Ottawa

I

Name	Town.	County
Imley, J. D.	Zanesville	Muskingum

J

Johnson, T. S.	Gypsum	Ottawa

K

Keyerleber, F.	Euclid	Cuyahoga
Kinsey, O. P.	Valparaiso, Ind.	
Knellinger, W. F.	Zanesville	Muskingum

L

Lawrence, B. F.	Adelaide	Marion
Lawrence, Jas. A.	Harlem Springs	Carroll
Lawrence, W. R.	Marion	Marion
Lauppe, Chas.	Urbana	Champaign
Lazenby, Wm. R.	Columbus	Franklin
Loop, A. I.	North East, Pa.	

M

Marvin, N. C.	Amanda	Fairfield
Maxwell, J. W.	Euclid	Cuyahoga
McCormick, C. H.	McCormick	Gallia
McNary, J. W.	Dayton	Montgomery
Merriman, D. J.	Painesville	Lake
Miller, Wm.	Gypsum	Ottawa
Miller, H. W.	Clyde	Sandusky
Minns, E. R.	1621 Neil Ave., Columbus	Franklin
Miesse, M. M.	Lancaster	Fairfield
Montgomery, C. W.	Newark, R. D. No. 9	Licking
Moore, S. R.	Zanesville	Muskingum

N

Nash, Chas. C.	Three Rivers, Mich.	
Nichol, A. M.	Granville	Licking

O

Ochs, Chas. H.	Lancaster	Fairfield
Ousey, James	32 North Union St., Delaware	Delaware
Overholser, Dan'l	Xenia	Greene
Owen, W. H.	Gypsum	Ottawa

P

Parkhurst, T. S.	349 Winthrop St., Toledo	Lucas
Perin, W. F.	Clyde	Sandusky
Perrine, John	Lebanon	Warren
Persing, H. L.	Clyde	Sandusky
Persing, M. J.	Clyde	Sandusky
Persing, S.	Clyde	Sandusky
Pierce, L. B.	Tallmadge	Summit
Pierce, Geo. E.	North East, Pa.	
Peters, W. B.	Marion P. O.	Marion

R

Name	Town.	County
Renshaw, R. L.	Lancaster	Fairfield
Rocky, J. W.	Miamisburg	Montgomery
Rogers, M. H.	Jamestown	Greene
Roudebush, Lowell	Nicholsville	Clermont

S

Sala, C. B.	Minerva	Stark
Scarf, W. N.	New Carlisle	Clark
Schule, Christian	575 Pearl St., Cleveland	Cuyahoga
Selby, A. D.	Wooster	Wayne
Shaw, Jesse	Alliance	Stark
Sherwin, H. A.	100 Canal St., Cleveland	Cuyahoga
Shiveley, M. J.	Chillicothe	Ross
Shirer, A.	Dayton, R. D. No. 7	Montgomery
Sloan, G. W.	Port Clinton	Ottawa
Smith, Dan L	330 North High St., Columbus	Franklin
Schneider, W. H.	2424 Rosewood Ave., Toledo	Lucas
Sterling, C. C.	Grand Rapids	Wood
Stevens, Fred H.	Newark, R. D. No. 1	Licking
Stockman, E. G.	Prospect	Marion
Stokes, J. A.	Clyde	Sandusky
Stark Co.	Horticultural Society.	
Storer, C. W.	Clyde	Sandusky
Streeper, J. P.	Lancaster	Fairfield
Suter, P. P.	Waterville	Lucas
Sutton, John H.	Ryansville	Lawrence
Sweet, M. E.	Mentor, R. D. No. 3	Lake
Swabley, G.	Tiffin	Seneca

T

Taylor, Samuel	Grove City	Franklin
Thew, J. W.	Marion	Marion
Terroff, J. J.	Defiance	Defiance
Thomas, Oliver	Mt. Pleasant	Jefferson
Tompkins, T.	Clyde	Sandusky
Tracy, J. R.	549 Lincoln Ave., Toledo	Lucas
Tussing, E. S.	Canal Winchester	Franklin
Tussing, R. J.	Canal Winchester	Franklin
Twitchell, A. J.	Mansfield	Richland
Twitchell, Lee D.	Mansfield	Richland

U

Upham, B. F.	Mentor, R. D. No. 2	Lake

V

Van Dervort, B. B.	Jamestown	Greene
Vergon, F. P.	Delaware	Delaware
Vergon, J. C.	Delaware	Delaware

W

Name	Town	County
Waid, C. W.	Wooster	Wayne
Ward, L. H.	Ashville	Pickaway
Warder, W. R.	Corner Clark and Center Sts., Chicago.	
West, T. B	Perry	Lake
Welch, Clyde	Delaware	Delaware
Wise, J. W.	Barnesville	Belmont
Withoft, F. G.	Dayton	Montgomery
Wheeler, W. J.	Paulding	Paulding
Whitney, C. L.	Warren	Trumbull
Woodard, E. M.	Willoughby, R. D. No. 2	Lake
Wyckoff, A.	Dayton	Montgomery

Y

Name	Town	County
Young, E. D.	Wickliffe	Lake
Yaple, L. B.	Chillicothe	Ross

Z

Name	Town	County
Zollars, Jas. W.	Hibbitts	Carroll

HONORARY MEMBERS.

Harrison, J .J.	Painesville, O.
Miller, W. W.	Columbus, O.
Ragan, Wm. H.	Greencastle, Ind.
Tryon, J. H.	Willoughby, O.
Van Deman, H. A.	Parksley, Va.